KNOWLEDGE MANAGEMENT PRACTICES IN THE KINGDOM OF SAUDI ARABIA PUBLIC SECTOR ORGANISATIONS

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DEDICATION

This thesis is dedicated to the memory of my late my mother Norha, my father Mohammed, my wife Shafyaa, my son Mohammed, daughters Norha, Randa, and Ghadah, sisters and brothers.

ABSTRACT

After a decade of sustained oil-based growth, KSA is at a transition towards knowledge based economy. Today, achieving that goal has become essential. To address these change challenges, knowledge is increasingly accessed and shared across different functional departments and professionals. This knowledge interdependence creates new management challenges resulting from the risks and difficulties of knowledge transactions across boundaries. Providing access to key tacit and explicit knowledge to decision makers during potential changes seems to be critical for effective decision-making. Recent technological developments have made a significant and positive impact on the ability and desire to manage knowledge. These challenges have made the government think to adopt Knowledge Management (KM) initiatives. There is, however, a paucity of empirical research on the key KM practices that have been implemented in the public sector organisations of the Kingdom of Saudi Arabia (KSA) – which is the core rationale for this study. Therefore, the aim of this study is to investigate how KSA public sector organisations are managing knowledge to gain sustainable competitive advantage. A web based, online questionnaire survey method was employed to collect data. Descriptive and inferential analysis was used to analyse the data obtained from the 107 completed and usable questionnaire for inference and conclusion.

The survey revealed that to improve access to key knowledge is most important driver for managing knowledge in KSA public sector organisations. The extent of implementation of KM initiatives is relatively low in the KSA public sector organisations. Furthermore, study revealed that conventional, simple and cost effective KM techniques and technologies are effective and extensively used. Lack of government support for using new technologies, lack of awareness of knowledge, and lack of leadership support are key challenges for managing knowledge in the KSA public sector organisations. KM strategies have a very high positive impact on improving citizen relations.

The study concluded that the challenge of managing knowledge is a daunting task for any organisation. An organisation's knowledge resources are complex and multifaceted, ranging from tacit components to knowledge that is explicitly represented. The ultimate key to organisations successfully embracing KM initiatives into daily operation is leadership. Therefore, the KSA government should take a greater leadership role in shaping the

information environment and the role of emerging technologies in society that have significant impacts. It is necessary for KSA public sector decision makers to recognise and use a blend of ICT and non-ICT based KM techniques and technologies. Before embarking on a KM journey, decision makers have to understand what it is that they would like to achieve with KM and what value it needs to add to their organisation in the context of Saudi Vision 2030. The scarcity of knowledge and expertise a huge challenge for many KSA public sector organisations. Therefore, training and education related to the management of knowledge will help leaders, managers, and change agents to better understand on how to craft and implement various KM strategies for competitive advantage.

RESEARCH OUTPUTS

Book Chapter

1. Algahtani, K.,, Renukappa, S., Suresh, S., and Al Nabt, S. *(2017) Knowledge management practices in Saudi Arabian public sector organizations: A case study of the Ministry of Justice,,* in the book titled Leadership, Innovation and Entrepreneurship as Driving Forces of the Global Economy, Edited by Benlamri, Rachid, Sparer, Michael, Springer Proceedings in Business and Economics, (ISBN 978-3-319-43433-9), DOI 10.1007/978-3-319-43434-6_39.

Journal article

2. Renukappa, S., Algahtani, K., Al Nabt, S., Suresh, S. and Alosaimi, H. (2017) Investigating the use of knowledge management tools within the Saudi Arabian public sector organisations, *Middle East Journal of Management*, Vol. 4, No. 4, pp.355–371.

Conference proceedings

3. Al Nabt, S., Renukappa, S., Suresh, S., and Algahtani, K., (2018) Leadership in a knowledge management context: the case of Kingdom of Saudi Arabia public sector organisations, 19th European Conference on Knowledge Management, 6 – 7 September 2018, University of Padua, Padua, Italy.
4. Al Nabt, S., Renukappa, S., Suresh, S., and Algahtani, K., (2018) *Leadership for knowledge management: the case of Kingdom of Saudi Arabia public sector organisations*, International Conference on Knowledge Management Systems (ICKMS2018), April 9-11, 2018, at Florida Polytechnic University, Florida, USA.
5. Al Nabt, S., Renukappa, S., Suresh, S., and Algahtani, K., (2017) *Leadership for knowledge management related change initiatives in the Kingdom of Saudi Arabia public sector organisations*, International Conference on Sustainable Futures (ICSF) 26 – 27 November 2017, Bahrain.
6. Algahtani, K., Renukappa, S., and Suresh, S., Al Nabt, S., and Alosaimi, H., (2017) *Usage of Knowledge Management Techniques and Technologies within the Saudi Arabian Public Sector Organisations*, 18th European Conference on Knowledge Management 7-8 September, Barcelona, Spain.
7. Algahtani, K., Renukappa, S. Suresh, S., and Al Nabt, S., (2016) *Use of knowledge management tools within Saudi Arabian public sector organisations*, 32nd International Research Conference on Business, Economics and Social Sciences, IRC-2016, December 30-31, Dubai, United Arab Emirates.
8. Algahtani, K., Renukappa, S., Suresh, S., and Saeed, A. *(2016) Knowledge management practices in Saudi Arabian public sector organisations: A case study of the Ministry of Justice,* The International Conference on Leadership, Innovation and

Entrepreneurship as driving forces of the Global Economy (ICLIE), 20-22nd April 2016, Dubai, United Arab Emirates.

CHAPTER 1: INTRODUCTION TO STUDY

1.1 INTRODUCTION

This opening chapter discusses the background and justification for managing knowledge in the KSA public sector organisations. It also presents the research aim, objectives, and research questions. Furthermore, it highlights potential benefits of this current research. Finally, it presents the structure of the thesis.

1.2 BACKGROUND TO THE RESEARCH STUDY

The unfortunate convergence of increasing oil supply and weakening global demand has created an oversupplied market and caused a 55% decline in international crude oil prices (EY, 2017). The fall in crude prices has prompted the biggest leadership, economic and policy shake-up in the history of Kingdom of Saudi Arabia (KSA). The KSA Government has cut the public sector bonuses and benefits for the first time since the collapse in oil prices, in a move that underlines the depth of the fiscal crisis facing the kingdom. Since 2014, oil prices have fallen by more than fifty percent and this loss of revenue has caused the Saudi Government to draw down its foreign currency reserves, return to the capital markets to issue bonds, raise taxes, reduce spending and greatly reduce subsidies offered on energy. Collectively, these actions have had an adverse effect on the domestic economy, causing GDP growth to slow, share prices to fall, pressure to mount on the currency and inflation to rise (Fattouh and Sen, 2016). The Government aims to reduce fiscal deficit by improving state efficiency, reducing costs, as well as its state subsidies. Consequently, the KSA Government has announced an ambitious new strategy: Vision 2030 (Fattouh and Sen, 2016).

The National Transformation Programme (NTP) is a detailed strategy to implement the broader Saudi's Vision 2030.

The NTP aims to reduce unemployment from 11.7% to 9% by 2020 and 7% over the following decade. Therefore, the KSA Government has the ambitious target of creating 450,000 private sector jobs by 2020 through the expansion of non-oil sectors. But at the same time it plans to decrease the civil service by 20%, as part of its aim of reducing the dominant role of the state. This is definitely a big challenge because Saudis have grown accustomed to working in the more 'relaxed' public sector environment. Furthermore, the demographic shift in the work place, whereby a large percentage of the working population will retire in the coming five to ten years. This has created unrest among the public sector organisations when their best employees depart. In addition to this, the climate change, the knowledge economy, and commitment to the principle of sustainability, pose profound strategic challenges for the public sector organisations in the KSA and beyond. Therefore, to address these issues and challenges, the KSA public sector organisations have to modify and/or amend many strategic, structural, financial, and operational changes.

According to Drucker (1995) knowledge has become the key economic resource and the dominant, perhaps even the only, source of competitive advantage. It has been observed that at the heart of an organisation's strategy process is a force, which has been termed as the ''knowledge force'', which is powered by the knowledge workers. Today, public sector organisations are also known as knowledge-based organisations and knowledge is as critical a resource to public sector organisations as it is to private sector firms (Siong et al., 2011). Knowledge is one of the building blocks for an organisation's success and acts as a survival strategy in this knowledge era (Witherspoon et al., 2013). Therefore, knowledge resource

resides in employees' minds and organisations have to utilise this valuable resource for their competitive advantage (Lin and Hwang, 2014).

Boyne (2002) noted that there are significant approaches that redefine the processes of management and its pursuit in public organisations and values like the expression method and performance evaluation obtained by the public mangers. Todericiu and Stanit (2016) noted that knowledge management (KM) one of the process of the new management techniques. It is the process of the organisational knowledge to give value to the organisations and it plays an important role in achieving sustainable competitive advantage (ALSarhani, 2016). According to Easterby and Lyles (2011) organisations that implement KM effectively see their performance positively improve. KM is used for solving problems within the organisations, even when we are dealing with a service that represents an innovation in the public sector. KM helps organisations to identify, document and store as well as re-distributing experiences. Furthermore, it facilitates the relationships with the beneficiaries, the partners and the suppliers of the public sector organisations (Bhatt, 2001; Alsereihy et al., 2012).

In addition, organisations categorise KM initiatives as part of their long-term strategy so that their organisational knowledge can be retained. Due to an increase in employee turnover, it has become important for organisations in KSA operating in either the public or private sector to consider different methods for capturing knowledge which have been gained by employees during their course of work (ALSarhani, 2016). KSA organisations have been implementing KM solutions but they face a number of issues and challenges in their implementation such as complying with Saudi government regulations and rules (ALSarhani, 2013). Furthermore, the work environment in Saudi organisations contains a number of restrictions that also limit the implementation of KM practices (ALSarhani, 2013). However,

it has been observed that organisations that have adopted KM techniques have developed their productivity through various methods that include reducing turnaround time (ALSarhani, 2016). However, the implementation of KM requires the availability of a range of elements, such as the appropriate organisational structure that leads to independence in decision making and organisational environment to gain access to knowledge (Salwa, 2015). This environment requires some factors such as organisational structures for KM, leadership, organisational culture, and information and communication technology (ICT) infrastructure (Salwa, 2015). For instance, a culture of knowledge sharing has to be formed to transform the behaviours and attitudes of individuals working in the organisation as well as to cut down barriers (Bolisani and Handzic, 2014). Therefore, it is necessary to increase awareness of the advantages of KM. Staff and managers are supposed to be well informed about the changes and benefits that KM can offer them as well as their organisation. Although they feel and acknowledge the power of knowledge, they have to believe in the power of sharing knowledge (Bolisani and Handzic, 2014).

Kim et al, (2014) noted that staff has to be formally rewarded and recognised, not just for knowledge sharing with others but also for their willingness to utilise the knowledge shared by others. Furthermore, it is very important for organisations to create and foster communities of practice (COPs). COPs are organisational centres of knowledge in which individual groups having similar job-related duties but do not participate in an officially established work team generating, disseminating and practising knowledge (Bi and Jiang, 2012). COPs can have a wider significance than simply sharing implied knowledge. These can be productive in the activities of the public sector, either on a specific or generic basis. Organisations need to foster COPs by ensuring the availability of resources and also through permitting members the chance to participate in order to develop and sustain COPs (Bi and Jiang, 2012).

After a decade of sustained oil-based growth, KSA is at a transition towards knowledge based economy. According to Al-Kibsi *et al.* (2015), there has been an increased focus in KSA on shifting away from an oil-based to a knowledge-based economy. However, the efforts that have been adopted to move towards knowledge economy are not yet sufficient developed and implemented KM technology and techniques. Today, achieving that goal has become essential. To address change challenges, knowledge is increasingly accessed and shared across different functional departments and professionals. This knowledge interdependence creates new management challenges resulting from the risks and difficulties of knowledge transactions across boundaries. Providing access to key tacit and explicit knowledge to decision makers during potential changes seems to be critical for effective decision-making. Recent technological developments have made a significant and positive impact on the ability and desire to manage knowledge. Even though many authors argue that access to, and, effective use of knowledge is a critical element in shaping and managing change in transitions there is little empirical research on the KM within the KSA public sector organisations. Therefore, the overall aim of this study is to investigate how the KSA public sector organisations are managing knowledge to gain sustainable competitive advantage.

1.3 RESEARCH AIM, OBJECTIVES AND QUESTIONS

The overall aim of this study is to investigate how the KSA public sector organisations are managing knowledge to gain sustainable competitive advantage.

In order to achieve research aim, the following research objectives were derived.

1. To explore and document the key drivers for implementing knowledge management strategies in the KSA public sector organisations.

2. To investigate and document the key knowledge management strategies that are currently being implemented in the KSA public sector organisations.
3. To explore and document the usage and effectiveness of key knowledge management techniques and technologies.
4. To critically appraise and document the main challenges associated with managing knowledge in the KSA public sector organisations.
5. To critically appraise and document the extent to which managing knowledge contribute to KSA public sector competitiveness.
6. To develop and validate an integrated KM framework for the benefit of KSA public sector organisations.

The following research questions were posed for the current study:

1. What are the key drivers that have fuelled the need for managing knowledge in the KSA public sector organisations?
2. What are the key knowledge management practices that are currently being implemented in the KSA public sector organisations?
3. What are the key knowledge management techniques and technologies that are used in the KSA public sector organisations?
4. How effective are the key knowledge management techniques and technologies that are used in the KSA public sector organisations?
5. What key challenges do the KSA public sector organisations face in managing knowledge?
6. What are the key KM benefits for the KSA public sector organisations?

1.4 CONTRIBUTION TO KNOWLEDGE

This study investigated the current level of understanding and implementation of KM practices' in KSA public sector organisations for competitive advantage. This research investigated the key KM practices, key reasons, challenges and the role which knowledge, experience and lessons learned plays in enhancing competitive advantage. The results of the study will benefit public sector organisations through improved awareness and understanding of (a) the key reasons for implementing KM initiatives (b) the impact of KM initiatives on organisational competitiveness and (c) the key challenges organisations face in implementing KM practices.

A KM framework for the benefit of KSA public sector organisations was developed and validated. Even though the framework which has been developed and validated with experienced professionals, it has not been tested within an organisation.

Some of the outcomes of the current study have already been published in one referred book chapter, one internationally peer reviewed journal paper and 6 referred international conferences attended by academics and practitioners. This research has therefore contributed both to the industry as well as the academic community.

1.5 THE ORGANISATION OF THE STUDY

The thesis has been organised in a logical manner in order to enable the reader to gain insight and understanding of how the key research objectives and research questions have been achieved. The layout of the thesis is in a logical sequence, commencing with the introduction to the study in chapter 1 to the conclusions and recommendations in chapter 11.

Chapter 1 - Highlights the research rationale, the aim and objectives of the study, research questions, and the study contribution to knowledge. This chapter also gives a brief overview of the other chapters.

Chapter 2 - Reviews the relevant literature on varied areas knowledge management. A thorough review and analysis of the relevant literature helped to identify research gaps.

Chapter 3 - Presents the background to KSA to provide an overview and an explanation about the KSA in order to understand the environmental characteristics. In addition it provides more detail about MOJ in KSA to the reader who is unfamiliar with the nature and the development of this sector.

Chapter 4 - Presents the research methodology employed in the study. It deals with the data gathering instruments associated with the methodology, and links the background materials of Chapters Two, and Three with the work of Chapter Four.

Chapter 5 - This chapter focuses on the key drivers that have fuelled the need for managing knowledge in KSA public sector organisations. The results discussed in this chapter are based on quantitative data. Finally, chapter 5 concludes with a summary. Overall, chapter 5 addresses the first objective. In doing so, first research questions of the current study have been addressed.

Chapter 6 - This chapter revealed six key KM initiatives that have been implemented in the KSA public sector organisations. The chapter also discusses the level of implementation of each of these key initiatives. The findings are substantiated with relevant literature. In doing so, chapter 8 addresses part of the second research objective, and second research question.

Chapter 7 - This chapter discusses the usage and effectiveness of knowledge management (KM) techniques and technologies in the KSA public sector organisations. In this chapter results are presented in two parts. In doing so, this chapter addresses the third research question of the study.

Chapter 8 - This chapter discusses on the key challenges which KSA public sector organisations face in managing knowledge. The study revealed ten key challenges for managing knowledge in the KSA public sector organisations. This chapter also discusses the challenges for managing knowledge in the KSA public sector organisations. In doing so, chapter 10 addresses part of the fourth research objective, and fifth research question of this study.

Chapter 9 – This chapter discusses results from the current study on the benefits of Knowledge Management practices for KSA public sector organisations. The discussion is based on online survey data collection and analysis of questionnaires. In doing so, this Chapter addresses the sixth research question of the current study and addresses the fifth research objective of this study.

Chapter 10 - This chapter presents knowledge management framework for the benefit of KSA public sector organisations. The findings from the previous stages of this research study were taken into consideration in the development of the framework. In doing so, Chapter 11 addresses the sixth research objective of this current study.

Chapter 11 - This chapter discusses the aim, objectives and research questions of the study. In doing so, it presents the finding and also provides conclusions and recommendations. The key findings are discussed with respect to the objectives of the study. Prior to that, the research process is discussed.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

This chapter presents a comprehensive review of the empirical literature in the area of knowledge management (KM). Key drivers, key KM initiatives, key challenges associated with managing knowledge, the impact of KM initiatives on organisational competitiveness, and different techniques and technologies for KM are discussed. This chapter concludes with a summary.

2.2 DEFINITION OF KNOWLEDGE

There are different authors with different views regarding the definition for KM. The area of philosophy concerned with knowledge is referred to as epistemology which aims to: (1) understand the environment that surrounds us and ourselves; (2) search for factors capable of distinguishing what is and is not true (Goldman, 1986; Russell, 1948). The crux of epistemology is developing an awareness of how true knowledge should be justified and, consequently, scientific methods are central to epistemology. Knowledge's philosophical concept is wide-ranging but there are two particularly notable philosophical viewpoints that have become prevalent. However, the definitions of knowledge can be classified into traditional and contemporary (Plato 427-347 BC and Aristotle 384-322 BC).

Davenport and Prusak (1998) and Skyrme (2000) stated that conventional epistemology makes only a limited contribution to KM because of the emphasis it places on where personal knowledge emerged from and its justification whilst largely overlooking the pragmatics of how knowledge is used. In contrast, contemporary definitions for KM because they pay considerable attention to the pragmatics of how knowledge is used and how knowledge can

be deployed in practical ways to share insight, frame experiences and contribute positively to practical tasks. KM involves knowledge being justified and, crucially, it addresses how to understand its uses to tackle tasks requiring knowledge-based functions. The current study is primarily concerned with contemporary definitions, the related concepts and practical uses.

Gardner (1995) summarised the various definitions of knowledge as follows: (a) 'know what' - an awareness of the information that is required; (b) appreciating why particular information is required; (c) understanding the way in which information needs to be processed; (d) 'know where' – awareness of where the required information can be accessed; (e) 'know when' – understanding when information is required.

According to Nonaka and Takeuchi (1995), knowledge is a dynamic process that involves personal beliefs being justified in line with the 'truth.' Meanwhile, KM involves using intellectual processes to acquire and process raw data to produce information. According to Plato (427-347 BC) knowledge is perception, true judgment and justified true belief (Anand *et al*. 2010). All of this information is placed into structures that embody knowledge (Saint-Onge, 1996).

Knowledge is a formal procedure involves an organisation's people, processes, and technology capturing knowledge and making it available to those who require it when they require it (Duffy, 2000). Furthermore, Uriarte (2008) states that it is KM that enables organisations to increase the value to their assets by means of various knowledge processes such as the identification, acquisition and preservation of knowledge.

2.3 THE DIFFERENCE BETWEEN DATA, INFORMATION, KNOWLEDGE AND WISDOM

The differences between Data, Information, Knowledge and Wisdom as stated by (DIKW) in hierarchy, wisdom is the unlikeliest and genuine of the four, while Zarzu and Scarlat (2015) stated that data comprises observations, truths and perceptions. Electronic media can be used to capture, store and communicate data. Unlike data, knowledge requires information to be interpreted from raw data so as to identify patterns or trends. Knowledge refers to information that enables action and decisions. Knowledge is the collection of information and is built from data, whereas wisdom refers to the experience, cognitive ability to make good decisions (Ackoff, 1989; Sternberg, 1990; Blumentritt and Johnston, 1999; Becerra-Fernandez *et al*, 2004; Becerra-Fernandez and Leidner, 2008; Nurnberger, and Wenzel, 2011; Zarzu and Scarlat, 2015).

The KM circle has embraced the DIKW hierarchy but other researchers have proposed alternative models. Clarke *et al.* (2005) say that understanding the DIKW cognitive and analytical process of knowledge can be realised by reflecting on existing knowledge. Knowledge can be memorised but it is only truly understood when it has been learned. Once a person understands knowledge, they are equipped to perform useful actions by assimilating new knowledge or information when it emerges. It is possible to use current information to develop an understanding. Liew (2013) stated that intelligence is related to knowledge and wisdom after examining the various concepts and also noted that it is important to utilise the DIKW hierarchy of KM.

2.4 KNOWLEDGE TYPES

From the empirical literature, it is apparent that there are two types of knowledge: explicit and tacit knowledge. Explicit knowledge may take the form of data or involve expressing formal or systematic language, specifications, scientific formula or user guides. In contrast, tacit knowledge cannot be seen, expressed or measured because it is experience-based and subjective. As such, it cannot easily be communicated to somebody else and nor is it simple to encode (Polanyi, 1966; Nonaka, 1994; Nonaka *et al*. 2000). Two methods can be applied when dealing with tacit knowledge: technical and cognitive. Technical knowledge is concerned with expertise, informal skills and know-how that is developed from experience over an extended period of time but cannot easily be communicated via formal channels. Meanwhile, cognitive knowledge comprises mental models, schema and beliefs that are unquestioningly assumed to be true (Nonaka and Takeuchi, 1995).

It is through experience that knowledge about how tasks should be performed is acquired (Argote and Epple, 1990; Swart *et al*., 2014). It is often the case that a person's ability to acquire knowledge is dictated by their previous experience and this suggests that knowledge acquisition is path-dependent. Declarative knowledge results when the producer of a product engages with the users of that product and, therefore, knowledge of this sort is typically documented (Karnoe, 1993).

With causal knowledge, an appreciation of basic theories and how systems function is acquired by conducting experiments and simulations (Laudan, 1984) but any new knowledge must always be assimilated (Cohen and Levinthal, 1990). Relational knowledge is intangible and is either held by one person or shared within a group through relationships. Meanwhile,

conditional knowledge is concerned with when and why procedural and declarative knowledge are used.

Studies have explored that knowledge is embedded through constant practice, knowledge is embrained, encoded and encultured. Embedded knowledge is complex, explicit and is held among groups of people (Blackler 1995). Embodied knowledge is dictated by actions and requires continual practical experience; hence the phrase 'knowledge by doing' (Tsoukas, 1996). Embrained knowledge is based on cognitive abilities and conceptual skills with targets being met by means of recognition and revamping. Tacit knowledge is mainly subconscious, whereas encoded knowledge is passed on to others by means of symbols and signage such as manuals, books and databases. It deals with the transmission of information as well as the storing and examination of knowledge (Lam, 2000). Encultured knowledge involves developing an understanding as a result of acculturation and socialisation (Zins, 2007; Urbancová and Vnoučková, 2015). Lam (2000) states that there are four types of knowledge but made no mention of encultured knowledge. Therefore, all types and sub-types of knowledge that possess tacit and explicit knowledge can be regarded as being either tacit or explicit (Cheung *et al.,* 2006).

2.5 KNOWLEDGE MANAGEMENT DEFINITION

KM is the skills, facts and understanding that a person acquires (typically from being taught or practical experience) that makes them better able to make decisions, evaluate context and act appropriately (Awad and Ghaziri, 2004; Tserng and Lin, 2004). As such, KM is concerned with how knowledge is created, captured, coordinated, secured, retrieved and distributed. It is by sharing knowledge across various projects that a competitive advantage can be realised over time.

There are various definitions of KM; many were generated in the last two decades. Among these definitions, some appear daunting and confusing (Jashapara and Tai, 2011), contradictory and overlapping (Anan and Singh, 2011) but this may be due to the fact that KM is derived from various fields including human resource management, linguistics, philosophy, business and information systems (Dalkir 2013, Schwartz 2007). It is because of these different fields that the definitions vary as they do.

Davenport and Prusack (1998) stated that KM is an existing resource for organisations much like their human resource management, information systems and organisational management. This particular definition is derived from human resource management and information systems. Meanwhile, Newell *et al.* (2009) explained that KM is concerned with how organisations can continue to innovate by drawing upon their inherent knowledge even in times of market volatility. Furthermore, Skrme (2011) considered KM to be the management of knowledge in a systematic and explicit way to help realise business goals by means of organisation, creation, diffusion, exploitation and use.

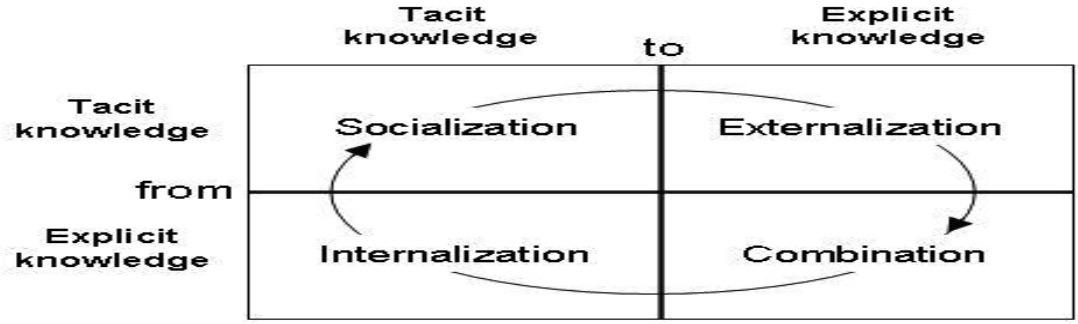
Not only is the definition of KM disputed but there is also no agreement regarding whether KM is a process, tool or strategy. According to Bounfour (2003), KM is a tool or set of tools used to form, disseminate and leverage information in an organisational setting. Conversely, Fischer (2001) asserts that KM is a process involving the formation, assimilation and distribution of knowledge. Meanwhile, Skyrme (2002) noted that KM is a continuous process whereby knowledge is identified, amassed, classified, stored, distributed, applied and created. O'Dell and Grayson (1998) considered KM to be a strategy by which the appropriate knowledge can be conveyed to those who need it in a timely manner while also encouraging

people to share their knowledge so as to enhance the performance of the entire organisation. From the various definitions of KM, it is possible to arrive at the following summary: KM involves capturing and assimilating knowledge between people using appropriate tools so that the organisation derives strategic advantages.

Nonaka and Takeuchi (1995) conceptualised the interactions between the various types of knowledge and developed the Socialisation, Externalisation, Combination and Internalisation (SECI) model to enable this which has subsequently been widely deployed by those seeking to benefit from KM. In the definition stated above, they summaries in four ways which: (1) Capturing and assimilating knowledge which is conceptualised by the SECI model; (2) Taking up the KM process; (3) Utilising KM tools; (4) Aligning KM with organisational strategy. However, regardless of how easily an organisation is able to access explicit knowledge, it offers no benefit unless employees utilise it in an effective manner (Suresh *et al.* 2008). The above theories are developed and are mostly use in management context.

2.6 THEORY OF KNOWLEDGE MANAGEMENT

By utilising the theory of knowledge management and knowledge creation processes, organisations are able to generate knowledge in a dynamic way.



Source: Nonaka and Takeuchi (1995).

Knowledge creation is a circular process that takes place internally in organisations. Starting at the individual level, it is a dynamic process that can ultimately incorporate entire communities beyond the initial department. Figure 1 illustrates a knowledge matrix model that was developed by Nonaka and Takeuchi (1995) and labels knowledge as being tacit knowledge or explicit knowledge.

The matrix developed by Nonanka and Takeuci (1995) takes knowledge and effectively converts it into a different form; i.e. combination, externalisation, internalisation and socialisation. Combination is the act of taking explicit knowledge and transforming it into a more complex type of explicit knowledge. In effect, it is a systemisation of concepts. Externalisation involves taking tacit knowledge and developing it into explicit knowledge. Meanwhile, internalisation is the act of transforming explicit knowledge into tacit knowledge by means of a learning-by-doing approach (e.g. codified information). Finally, socialisation is the act of passing tacit knowledge between people by means of shared experiences or imitation. Nonaka and Takeuchi's (1995) model is well-suited to the prevailing organisational culture in Saudi Arabia. For example, it is the norm for socialisation to take place within a family setting because Saudi culture is associated with collectivism characteristics. Be that as it may, the high power distance in Saudi society means that the benefit of knowledge is only experienced by those with close connections to senior managers. Consequently, this gives rise to problems with regards to information flows, communication flows and employee engagement, all of which are detrimental to effective knowledge sharing (Al-Adaileh and Al-Atawi, 2011). Organisations use knowledge management for externalisation by transforming knowledge from a covert state to an overt state (Weir and Hutchings, 2005). Employees in Arab organisations do not typically communicate freely and tend to keep their feelings and opinions to themselves, even when working as part of a team. Their focus is on completing

the task before them and information is only exchanged for this purpose. Consequently, explicit knowledge is shared between the employees but the same is not true of implicit knowledge (Al-Adaileh and Al-Atawi, 2011). In addition, the Arab population typically take a conservative approach to risk and are reluctant to embrace change. This coupled with the prevailing hierarchical structure results in communication being stifled, thereby preventing leaders from passing on details about the change process (Rees and Al-Thakhri, 2008). With regards to the combination process, Arab organisations are typically structured along family lines. The familial structure is associated with concentrated authority and power and this results in senior management retaining much-needed knowledge. Lower ranking members of staff are unlikely to gain access to privileged information or knowledge unless they have Wasta (connections), in which case they will have access to tacit knowledge (Weir and Hutchings, 2005). This can prove problematic because junior staff may become disillusioned if there is a perceived lack of trust throughout the organisation (Al-Adaileh and Al-Atawi, 2011). Lastly, internalisation in the Arab culture typically occurs via informal channels. This is due to adherence to the religion of Islam rather than a secular dogma, thereby encouraging discussion and consultation (Weir and Hutchings, 2005). Because Arab culture still draws upon the influence of tribes, it is usually the case that organisations employ an autocratic style of leadership. Therefore, it is task-related performance instead of intellectual terminology that is valued most highly.

2.7 WHAT ARE KNOWLEDGE MANAGEMENT STRATEGIES?

Duhon (1998) stated that KM strategies offer an integrated approach for identifying, capturing, appraising, accessing and sharing the assets of an organisation. Examples of such assets include documents, databases, policies and the experience of workers that has yet to be captured and utilised. According to Davenport (1994), KM involves capturing, disseminating

and applying knowledge in an effective manner. KM strategy is a driving force for KM activities where knowledge is synthesised by applying an extended variety of a pre-existing "KM spectrum" which when applied provides further guidance to describe the means that connect the driving forces to KM strategies (Haggie and Kingston, 2003).

Bloodgood and Salisbury (2001) stated that KM is based on how knowledge can most effectively be codified into a format that enables effective application in expert systems or supporting decisions. They said it served the organisation when it remains in a tacit form. However, the best way to deploy information technology is during various forms of strategic change, particularly when you combined the tacit and explicit knowledge that give more appropriate in some situation than in others.

Knowledge is crystallised when knowledge that was previously tacit becomes explicit. Upon crystallisation, knowledge can be shared and becomes the foundation for developing new knowledge. An example of such a conversion process is the creation of concepts in new product development. However, if tacit knowledge is to be successfully converted to become explicit knowledge, there must be metaphor, analogy and models. As a result of internalisation, the resulting explicit knowledge is disseminated throughout the organisation and becomes tacit knowledge as a result of employees learning by doing or through action and practical e.g. training programme can help the trainees to know the organisation by reading books and manuals about their job and the organisation (Nonaka and Takeuchi,1995).

The creation of knowledge is regarded as a process that is self-transcending with individual people going beyond what they have previously known to create knowledge. In socialisation, it is only possible to share tacit knowledge by means of experience with colleagues and

customers. Finally, new knowledge derived from externalisation is analogue or digital sign while in internalisation, an individual's access the knowledge through group and the entire organisation (Nonaka *et al*, 2000).

Zack (1999) states that KM involves setting out to bolster resources as well as knowledge capabilities to serve the intellectual demands of the strategy being pursued, thereby helping to close the knowledge gap. According to Masa'deh and Shannak (2012), KMS is central to efforts to create, disseminate and apply knowledge within organisations. Bettiol *et al.* (2012) affirmed that KMS is effectively a roadmap directing organisations to become more efficient and apply all aspects of KM in a more effective manner. Consequently, there are two perspective of KMS that have come to dominate KM (Oluikpe, 2012): customisation and coding; albeit that alternative classifications have also been advocated.

Guidance for people and systems are the two most notable methods (Choi and Lee, 2012). According to Hansen (2002), a strategy of personalisation and encoding, helps to encourage knowledge flow within organisations by means of interaction and networking, whereas the second is concerned with how explicit knowledge is captured, coded, stored and distributed to serve the goals of the organisation (Kwong and Kwok, 2009). As such, it cannot be assumed that all strategies deployed within an organisation are due to the documentation of knowledge but, rather, can be utilised by means of people engaging with each other. Therefore, KM instruments exist for different classifications.

Table 2.1 below presents the relationship between coding strategy and personalisation strategy as relates to the diagnosis and measurement of the orientation of a company to KM. Based on this relationship, it is possible for an organisation to differentiate between coding

and personalisation strategies and determine how the organisation focuses on the utilisation of knowledge and reapplication of codified knowledge (Meroño-Cerdan *et al*., 2007).

Table 2.1: KMS strategies adapted

Instrument and Strategies of KMS	
Coding Strategy	**Personalization Strategy**
System decision support	Initiatives spontaneous knowledge transfer
Groupware	Mentoring
Document repositories	Equipment/Communities of Practice
Knowledge Maps	Groupware
Workflows	Video conference
Shared databases	Yellow pages
	Discussion Forums

Source: Pereira (2011), Meroño-Cerdan *et al*., (2007), Kwong and Kwok, (2009).

Usually, organisations are affected when employees with significant roles, extensive experience and valuable skills opt to leave for whatever reason. In an attempt to tackle this problem, various KMS methods have been proposed. Consequently, there are various processes that must be followed when pursuing a KMS. Pereira (2011) specified six steps to be considered as shown in Table 2.2 below.

Table 2.2: Steps to follow as part of KMS

Number	**Six steps for KMS**
1	Be aware of the prospect for more meaningful business in future.
2	Identify the 'areas of knowledge' that are most important to the company.
3	Specify the key performance indicators to be applied in the company.
4	Specify the current and future effect that the knowledge areas will have in the key performance indicators.
5	Be aware of the state of the knowledge areas and where opportunities lie.
6	Be aware of which plan will be implemented based on the above and how progress is to be evaluated.

Source: Pereira, 2011

2.8 THEORY OF IMPLICIT AND EXPLICIT KNOWLEDGE

Implicit-explicit learning is a knowledge representation. Knowledge can be regarded as an attitude that predicts some entity and holds true. The following sets out how it is possible for knowledge to be either implicit or explicit by nature. The most significant form of implicit knowledge reveals the qualities of objects or events but does not offer predictions for a given organisation. Meanwhile, in explicit knowledge, fact is represented for the personal benefit of being aware of that fact. Such ideas are debated in relation to other such age groups; i.e. conscious-unconscious, direct-indirect tests, procedural-declarative, verbalizable-non-verbalizable, and automatic-voluntary control.

This is effectively a practical summary outlining the ways in which learning can be utilised as a means of integrating and relating the various applications of implicit-explicit distinction in a range of research domains. Examples are offered for memory, artificial grammar learning, visual perception, and cognitive development.

Implicit learning is concerned with particular tasks and strives to analyse the body of learning and how this can be retrieved to explain their underlying nature and how they perform. According to Buchner and Wippich (1998), implicit learning is a "a primitive process of apprehending structure by attending to frequency cues" rather than being a highly explicit undertaking. An alternative definition is that implicit learning does not require an awareness of the matter being learned. For example, young children have no comprehension of language structure and whether it is inductive or implicit when they learn their native language. Meanwhile, it is possible that over time, explicit knowledge will become implicit because an

individual ceases to be aware of its structure whilst gaining awareness of the structure of implicit knowledge upon attempting to gain access to it.

According to Sternberg and Horvath (1999), an insightful way of describing implicity knowledge, explicit knowledge, and tacit knowledge is that explicit knowledge set out tangible procedure to be carried out. Tacit knowledge has extreme difficulty in setting out tangible goals, while implicit knowledge sets out tangible procedures to be performed but has the potential to become explicit (Benjamin and Shepherd, 2003; Goujon *et al*., 2014; Bates, 2015). Whilst it is problematic to articulate the technical dimension of knowledge, it is possible to articulate the implicit concept of the cognitive dimension. As such, this lends weight to those advocating the use of the SECI model.

However, Matos *et al*. (2009) refers to the integration and re-engineering of systems (IRIS) as a means of devising KM systems. The purpose of such an approach is to enable knowledge to be identified, amassed, processed, saved and distributed. In addition, methods are suggested to assist with developing phases. Careful thought must be given to how a KMS was designed when it comes to implementing a KMS methodology. Lopez and Meroño (2011) identify several factors based on the choice of strategy as shown in Table 2.3 below.

Table 2.3: Elements to be considered as a result of the type of EGC

	Codification	**Personalization**
Economic motivation	Reusing knowledge	Devising new solutions and knowledge
Knowledge Managed	Explicit	Tacit
Focus	People to text	People to people
Use of IT	Large-scale investment in IT: connecting people with reusable knowledge	Modest investment in IT: enable discussions and exchange of tacit knowledge
Main tools	Applications of decision support Document repositories Knowledge Maps Workflow Databases Best Practices	Mentoring programmes Groups Video-conferencing Directory of knowledgeable people Email Discussion forums
RRHH Policies	E-learning Giving for utilising and adding to databases	Mentoring Giving for sharing knowledge directly or with peers
Advantages	Gaining economies of scale Saves time No need to waste time creating something that already exists Speedier and better access and distribution	Easy approach to cataloguing knowledge More flexible and adaptable knowledge Quality of task enhanced Customer perception enhanced Manages knowledge that is not codified

Source: Lopez and Meroño (2011)

2.9 KNOWLEDGE MANAGEMENT PROCESSES

Since it has been accepted that researcher on available literature on KM have no agreed consensus definition, there is a need to investigate the processes advocated in the empirical literature, particularly at the time when KM was widely adopted by the construction sector and in academia. Van der Spek and Spijkervet (1997) stated that KM involves generating, storing, disseminating and retrieving knowledge. It is apparent that the terminology overlaps in many areas. For instance, Swan *et al.* (2000) referred to ‘using’ and ‘sharing’ knowledge,

whereas Tiwana (2002) used the terms ‘utilisation’ and ‘sharing.’ Meanwhile, Davenport (1994) referred to KM as the practice of capturing, disseminating and using knowledge effectively. It is possible to decompose KM into a number of components as follows: people generate information and receive content; content is the ‘real’ pieces that convey information; routines and procedures specify how information is to be collected, accessed and disseminated; technology is used to create, store, share and access information; organisation enables people, technology, content and routines to co-exist.

2.10 KNOWLEDGE MANAGEMENT TOOLS

Tools are usually required to facilitate KM. Just as it can prove difficult to arrive at a single definition of KM, firm definitions of KM tools can also prove elusive owing to the lack of consensus regarding what constitutes a KM tool. For instance, Egbu *et al.* (2005) noted that non-IT tools are termed as KM techniques and the IT tools termed as KM technologies. Pfeffer *et al* (2013) assert that KM tools can be information technology-based but are not necessarily so. However, Massingham (2014) noted that the term ‘KM technologies’ refers to information technology-based tools and ‘KM techniques’ refers to non-information technology-based tools. KM technologies involve an information technology infrastructure and require the input of explicit knowledge. In contrast, KM techniques are people-based and require the input of tacit knowledge that can be derived from personal interaction such as brainstorming. Ruggles (1998) noted that not all tools are computer based but much emphasis is placed on the electronic tools due to their dynamic capabilities, quick evolution, and organisational impacts. He does not differentiate the term KM techniques and technologies whereas he terms it as KM tools.

Massingham (2014) asserts that KM tools are able to amass data from various sources and classify, integrate and codify these data. In addition, Massingham (2014) suggests that these tools make it possible to retrieve and reveal knowledge and can also be employed in order to disseminate knowledge among staff. Pfeffer *et al*. (2013) state that KM tools are technologies that facilitate KM sub-processes such as codification and knowledge transfer. Alternatively, Massingham (2014) suggests that the terms 'KM tools' and 'KM techniques' are interchangeable and believe that KM techniques are simply the means through which knowledge is managed using tools. The lack of consensus in the empirical literature therefore poses a question regarding what the practical differences and similarities are between tools, technologies and techniques.

Davenport and Prusak (1998) assert that KM tools are more than information technology it is about the people who add value by transforming static data into meaningful information and knowledge by mixing it with their own experience and interpretations. Therefore, Davenport and Prusak (1998) acknowledge that KM techniques and technologies are mutually dependent. There are various terminologies that have been used to distinguish between information technology tools and non-information technology tools in the empirical literature. For instance, Vacik *et al*. (2013) use the terms 'organic' and 'mechanistic;' Massingham (2014) opts for 'soft' and 'hard;' while Vacik *et al*. (2013) refer to 'personalisation' and 'codification' tools. In this study, KM techniques and technologies are not differentiated. This is because in most scenarios techniques and technologies are interdependent and support KM activities such as knowledge mapping, knowledge capturing and knowledge sharing. Table 2.4 summarises the core differences between KM technologies and techniques.

Table 2.4: Key differences between KM technologies and techniques

KM Technologies	KM Techniques
- Based on explicit knowledge - Involves information technology infrastructure and know-how - Can be difficult to set up and maintain - Expensive to set up and maintain	- Grounded on tacit knowledge - People-based - Easy to set up and maintain - Relatively cheap to set up and maintain

Source: Massingham, (2014)

There are numerous techniques and technologies that can be used to facilitate knowledge management. With regards to technologies, these can be classified as either software or hardware. In effect, the hardware is the platform upon which the software is able to operate so as to store or transfer knowledge. This hardware will often take the form of a personal computer but could also include a server. Meanwhile, the software engages more closely with the content that is used to apply KM (Pfeffer *et al.* 2013)**.**

It is imperative that organisations select tools that are well suited to achieve their knowledge management objectives. It is highly unlikely that a single tool can be relied upon to achieve all aspects of the knowledge-management sub-processes such as access, storage, knowledge creation, capture, codification and assessment. For instance, data mining may be appropriate for codification but a knowledge base would be called upon for the storage of knowledge. Meanwhile, the communities of practice technique would be ideally suited to the sharing of knowledge (Chua and Banerjee, 2013). There are various factors that will determine the optimal choice of knowledge techniques and technologies. Among other matters, the decision will be shaped by the location of knowledge, the nature of that knowledge, the type of knowledge management sub-process being supported, and the reason why knowledge management is required in the first place (Vacik *et al.* 2013).

2.11 KNOWLEDGE MANAGEMENT TECHNIQUES

There are various types of knowledge management techniques and this section summarises several of the most widely used examples. At the most basic level, knowledge can be conveyed face-to-face. This offers a simple way of sharing tacit knowledge among a relatively small number of people. This is usually achieved in an informal setting but its effects can be profound. Related to this is mentoring whereby a junior member of staff within an organisation is paired up with a more senior person so that they can benefit from that person's advice and experience. The senior member acts as a coach and is able to identify areas in which the trainee may require further training (Chua and Banerjee, 2013).

There are certain techniques and tools adopted within organisations for knowledge management that would include Brainstorming, Bulletin Boards, Coaching and Mentoring, Formal Education and Training, Face-to- Face Meetings, Informal Networks within the Department, Internet/Email/Intranet, Video Conferencing etc that are frequently adopted by the organisations worldwide.

Related to this is the apprenticeship, whereby junior members of staff are given informal instruction in order to learn a specific trade. This is typically achieved through practical experience and most of the learned skills are acquired through observation and repeated practice (Vacik *et al.* 2013).

A more formal approach to acquiring skills is offered by training. Training is usually based on pre-agreed plans and strategies specified by the organisation offering the training. This approach is useful when there is a need to update an employee's knowledge on a regular basis; possibly in order to demonstrate compliance with a ruling or regulation (Jenab and Sarfaraz, 2012).

Jenab and Sarfaraz, (2012) further highlighted Coaching and Mentoring acts as a tool through which organizations can transfer their information to the employees especially the new employees who need to access such kind of information.

Work Manuals or training manuals are also adopted within organisations as a source for transferring all the important and needed information to the concerned people. According to Vacik *et al.* (2013) this is considered as an efficient tool for developing knowledge among concerned individuals about the standards, policies and practices of the organisation which is quite helpful for them.

Formal Education and Training is another method through which organisations spread the necessary information within organisations and the employees working within. Often agencies are hired for this purpose as well called the training agencies (Vacik *et al.* 2013). Similarly they highlighted that organisations often provide their employees with on job training as well which is also meant for spreading and managing the important knowledge among employees.

Another example is brainstorming which is where a number of people convene in order to collectively air their opinions about how a particular problem or challenge can be addressed and solutions found (Durst and Runar Edvardsson, 2012). According to them this technique would be helpful in knowledge management as this process would allow the members in exchanging the information.

Project Summaries can be considered a part of these brainstorming activities as well as they can be considered as a technique through which the organisations can reviews and preserve the important information from projects and use them in future projects (Durst and Runar Edvardsson, 2012). Considering that it can be stated that project summaries would contribute within knowledge management within organizations as well (Durst and Edvardsson, 2012). Meetings are also conducted with the same purpose in which the information is shared and brought under discussion. Similarly Face-to-Face Meetings are also considered as a tool that would contribute in knowledge management within organisation (Durst and Edvardsson, 2012).

Bulletin Boards can be used for transferring important information. Bulletin boards are the source or boards through which often public information is transferred. There have been electronic bulletin boards developed as well that have been making it more attractive and useful. According to Durst and Edvardsson (2012) these can be used as an efficient tool for knowledge management. They further highlighted Interaction with Client/Supplier/Customer as one of the methods that have been adopted within organisations and companies when it comes to spread of knowledge and information to the customers and also communicating and gathering information from customers.

Communities of practice also use a group-based approach to KM. These knowledge communities combine individuals with different skills and experience and they are tasked with working together in order to realise a specified shared goals (Jenab and Sarfaraz, 2012). While they also highlighted the Informal Networks within the Department as a technique that is adopted by the organisations, through which KM is managed within organisations.

Post-project reviews are another example. These are conducted after the completion of a project and are used to reflect on areas for improvement when conducting future projects. They can also be used to drive home the lessons that have been learned during the project. One of the main advantages with post-project reviews is that they lend themselves to knowledge capture (Durst and Edvardsson, 2012).

Working in Cross-Functional Teamwork has been found useful in KM. According to Durst and Runar Edvardsson, (2012) it is a team in which people possessing different set of skills work together as a team for completing common task. According to them it can serve as a method through which these team members can share and manage knowledge efficiently. Considering that it can be stated that this could serve as a tool for knowledge management.

The final example of a knowledge management technique is recruitment. This offers an opportunity for organisations to purchase external tacit knowledge. As such, acquiring a new member of staff effectively extends the knowledge base of the organisation. Crucially, the knowledge that the new member of staff has can be shared among the other members of their team, either formally or informally. This is important because if the new recruit were to leave

the organisation at some stage in the future, their knowledge would still remain within the organisation (Chua and Banerjee, 2013). While they further highlighted job rotation as a technique through which tacit knowledge can be transferred within employees as this involves or requires the employees on job rotation to learn and develop the skills and capabilities for different jobs (Chua and Banerjee, 2013).

Organisations have a Help Desks which is also considered as a source for obtaining information however this is the point where important information is stored so that it could be available to the ones who need it. Considering that it can be regarded as a technique for knowledge management (Jenab and Sarfaraz, 2012).

2.12 KNOWLEDGE MANAGEMENT TECHNOLOGIES

Similarly, there are a number of KM technologies and common examples of these are summarised in this section. At a simple level, knowledge bases offer a store of knowledge about a particular topic and this information is arranged in a highly organised way. The information is typical of that found in books, journals, libraries or websites (Sultan, 2013).

Another example is data mining or text mining which is a means for acquiring useful knowledge from a large body of data or text. The distinction between data and text can be made in the sense that data single structured facts whereas text is unstructured data. The purpose of data or text mining is to identify patterns that can be used to support an argument. This is exploratory in nature because new patterns can be revealed by data and text mining

that have not previously been observed. Therefore, it is conceivable that new relationships can be identified by using this approach (Park *et al.* 2013).

Internet is regarded as one of the most efficient tool and technology that has been helping all the organisations in knowledge management, it can be stated that knowledge management depends upon internet as this is considered as the primary source and requirement for transferring information (Sultan, 2013).

An intranet is a network exclusively for the use of a single organisation. In contrast, an extranet gives access to a limited number of outside agents who are permitted to contribute knowledge and/or acquire knowledge. This is useful if the members of an organisation are scattered across a large geographical area, thereby making a physical central hub impractical (AF Ragab and Arisha, 2013).

Similarly, groupware is software that enables a number of people to share knowledge. This is beneficial when it is necessary for a group of people to collectively arrive at decisions but they are unable to meet in person, possibly because they are dispersed across a large geographical area. Examples of groupware tools include email, document repositories, instant messaging and discussion areas (Sultan, 2013).

Other than that Telephone is also considered as a source for transferring the knowledge and information to the source directly. Considering that it can be considered as a source for knowledge management. According to AF Ragab and Arisha, (2013) telephones are often considered as a source for knowledge management within organisations as through this the exchange of information becomes even more convenient for them.

Video Conferencing is also considered as one of the well-known techniques and technology through which the organisations for knowledge management. This tool has been analysed as for one of the techniques for knowledge management and it was observed that it has been serving quite effectively in this regard (AF Ragab and Arisha, 2013).

Knowledge maps facilitate the retrieval of knowledge and are created by portraying aspects of knowledge type and location in a graphical depiction from which a map can be composed. This map illustrates where knowledge can be found either within an organisation or more widely beyond the organisation's boundaries. These maps can be used to locate databases, written text or people (Park *et al.* 2013).

Other than that there have been various social media tools developed as well that have gained quite popularity as they have been serving greatly as a source of communication for individuals (Yates and Paquette, 2011). The social media sources or tools would include Viber, Facebook, twitter, whatsapp, facetime, Instagram, snapchat etc (Yates and Paquette, 2011). all of these tools have been used heavily and they have been regarded as an efficient tool for transferring information and knowledge to the concerned people (Yates and Paquette, 2011). This is the reason why brands and companies have been using this as a source to communicate and transfer their information (Hemsley and Mason, 2013).

This is the reason why these tools have been used by the organisations as well in which they have been sharing information internally and externally as well (Hemsley and Mason, 2013). However, the usage of each of these tools would differ from one another like considering the

example of Facebook which is considered as one of the most exploited social media medium however it has been observed that this medium is used for sharing information publically more, which would not make it that effective when it comes to sharing of internal information within organisation (Sultan, 2013). Twitter is also one of the social media platforms through which important and updated information is frequently share, however, this would also involve sharing information more publically which would not be helpful for organisations when it comes to sharing information internally (Sultan, 2013).

Similarly, Instagram and snapchat, are also some of the mediums heavily adopted but people majorly socialise in an informal manner through this source (Wankel, 2016). While viber is also considered as one of the cheap and effective sources through which the information sharing in a private manner was done, however it has been observed that this application has been losing its market share due to its declining quality and there are other applications that have been serving with better quality and experience (Barhoumi, 2015). Like considering the example of Whatsapp that has been widely adopted globally now and has been appreciated within organisations as well through which the information has been efficiently shared internally within organisation (Wankel, 2016).

Now WhatsApp has been offering the options for making calls as well which has further developed effectiveness of this tool (Barhoumi, 2015). Similarly facetime is also considered as a tool that would be helpful in this regard as this would also support making calls however the application is restricted to limited devices and operating systems which would limit its adoption (Wankel, 2016). This tool has been used within organisations for conducting meetings, teleconferencing etc (Wankel, 2016).

Other than that LinkedIn has been used as a tool by the organisations through which they convey the needed and important information. According to Wankel (2016) this is also one of the tools that has been contributing and transforming the knowledge management but still its contribution is comparatively lesser than other mediums.

Finally, a taxonomy is a collection of terms relied upon in an organisation and the relationships that exist between these terms. These relationships may be networked, hierarchical or functional. The representation of these terms is supported by ontologies. Ontologies also support domain theories that dictate operations that can be performed with the concepts in the ontology (AF Ragab and Arisha, 2013).

2.13 SUSTAINABLE COMPETITIVE ADVANTAGE

Knowledge Management is essential in a modern organization in order to maintain a sustainable competitive advantage. Without Knowledge Management it is unlikely that there will be any competitive advantage, and if any exists it will not last (Nejati *et al*. 2010).

- **Definition of sustainable competitive advantage**

According to the Cambridge English Dictionary, a sustainable competitive advantage is one that enables a company to outperform its rivals and sustain that advantage over an extended period (Goel et al. 2010). This definition is acceptable as a working definition of Sustainable Competitive Advantage. It includes Human Resources and Knowledge Management, because organizations have now largely realised that the people who work in the organization are actually their most important asset.

- **Relationship between knowledge management and sustainable competitive advantage**

The relationship between Knowledge Management and Sustainable Competitive Advantage is linked to the concept of human capital (Nejati *et al.* 2010). Once it is accepted that the employees and management of an organization are an asset, it becomes a logical step to ensure that those people are as knowledgeable as possible.

The link to sustainable competitive advantage will be the width of that knowledge – however much individuals may know about the organization's own product, the advantage over the opposition comes from what else they know. Knowledge of the marketplace, knowledge of the opposition, knowledge of world politics; all of these can give an organization an advantage over its competitors, but unless that knowledge is managed correctly, that advantage will not last long, so from the definition above cannot be considered 'sustainable'.

It is therefore apparent that one of the major reasons for introducing KM to an organization is to ensure that the organization continues to have a greater spread of knowledge than its competitors, and, more importantly that it knows how to use that knowledge (and where in the organization it can be found – Knowledge Mapping). In turn, this should be a self-perpetuating cycle, since if an organization successfully uses Knowledge Management and KMaps to get a competitive edge, it will also probably be perceived as a good organization to work for, and this will attract an even wider range of knowledge in the new employees.

The reality of this is that, unless the organization has adopted Knowledge Management, and has made thorough and accurate KMaps, it is unlikely to become a 'market leader', no matter how good its product or service. However, once it has accepted the idea of Knowledge Management and has completed an audit of the available knowledge and made a KMap, it should find that the competitive edge is not only obtained, but sustained, as the success of the organization attracts new employees with a diverse range of experience and therefore knowledge. In effect, however, a sustainable competitive advantage is also part of general sustainability.

- **General sustainability**

Successful organizations and organisations in the modern environment need to ensure that they are sustainable in every way and this includes 'Organisational sustainability. Madan and Khanka (2010) analysed both the direct and indirect factors that influence organisational sustainability, and they found that the indirect factors affect the competitive advantage as well as impacting on organisational sustainability. They also found that there was a relationship between Knowledge Management and Innovation, which makes the two co-dependants. Using both KM and Innovation bring the competitive advantage and both rely on the 'memory' of the organisation or company.

In the Twenty First century, knowledge has been recognised as being the most important or primary resource of any organisation (Claiborne, 2011), because it can bring long term sustainable competitive advantage. Towards the end of the twentieth century, many organisations began to introduce Information Technology (IT) (Gonzalez and Martins, 2014)

to assist with Knowledge Management– this increases individual access to the knowledge within the organisation.

2.14 BRIEF DESCRIPTION ON THE LEADERSHIP

Leadership plays an essential role in initiating evolutionary change processes that are more adaptive. It is the creation of an environment through which objects can be achieved and embodied values (Salin and Hoel, 2010). It is the process of influencing a collection of people to help realise a common aim. Leadership is creating vision and activating people to achieve it (Kim *et al*. 2003). So, leadership is an important dynamic force that is required if an organisation is to realise its stated goals. In the absence of leadership, a collection of individuals will become argumentative and there will be a loss of cohesion because they will all set about doing things in the way they believe to be best. Good leadership not only helps select appropriate goals but also ensures that all individuals pull in the same direction.

2.15 SUMMARY

This chapter has presented a thorough review of the literature on knowledge management that relates to the current study's research objectives. Merely allowing knowledge to reside within an organisation is insufficient to deliver success; rather, it must be actively managed. Various mechanisms can be utilised to manage knowledge in organisations (both public and private sector organisations). However, the challenge of effectively managing knowledge within an organisation should not be underestimated. The knowledge contained within an organisation is both multifaceted and highly complex and spans the full range from tacit to explicit. Moreover, if the decision-making process is to be effective, decision makers must be

provided with access valuable tacit and explicit knowledge. Prior to the discussion of the research methodology adopted for this study, in order to set the context of this research, the next chapter discusses knowledge management within the KSA public sector organisations.

CHAPTER 3: KNOWLEDGE MANAGEMENT PRACTICES IN KSA PUBLIC SECTOR ORGANISATIONS

3.1 INTRODUCTION

This chapter presents a thorough review of literature in the area of knowledge management (KM) in the KSA public sector organisations. This chapter examine the particular context of the public sector regarding the need for KM practices. Therefore, various related aspects have been covered and this also includes theoretical and practical examples by using authentic and contemporary sources. This chapter concludes with a summary.

3.2 KNOWLEDGE MANAGEMENT PRACTICES IN KSA PUBLIC SECTOR ORGANISATIONS

The KSA is one of the GCC countries and the KM within GCC countries have been brought under consideration through various studies in which there have been certain weaknesses identified within them (Alsereihy *et al.,* 2012). However the governments of these countries have been investing in developing the KM within their organisations, focus is to develop and attract human capital and resources that would help them reach their visions (Omotayo, 2015). For example, they invest on developments within training, education and research. Despite of this increased and investment of GCC countries in KM implementation there is still certain weaknesses and challenges related to KM implantation which directly affect organisational performance (Alsereihy *et al.,* 2012).

One the major factor that affect KM implantation is that there has been availability of resources, but their utilisation is weak which affecting the return on investment for the GCC organisations (Baskerville and Dulipovici, 2006). In addition; it has been highlighted that

about half of the resources in the GCC organisations are not utilised properly which minimise the benefit that organisations can get through those resources (Omotayo, 2015). However, the KSA organisations have been quite fortunate when it comes to attract the professionals and skills from all over the world, but the fact that these organisations are not well aware of the best practices in order for them to effectively utilize these resources (Baskerville and Dulipovici, 2006).

With the upsurge in digital connectivity, government agencies all around the world are utilising information and communication technology (ICT) in order to enhance productivity, increase transparency, improve accountability and facilitate reforms of the public sector (Tambyrajah and Al-Shawabkeh, 2009). Because government agencies are knowledge-based organisations, developing KM is crucial for governmental organisations in KSA at the local, regional or national level. KM has also become one of the ingenuities within most countries' e-Government Plans (Yahya and Farah, 2009). This research paper presents a synopsis of KM initiatives and developments in the public sector predominantly from developing countries. The main advantage of KM is to maximise productivity in the public sector while augmenting delivery of public service. More specifically, the objectives for KM initiatives, according to Jain and Jeppesen (2013) and Stricker (2014) include:

- Maximising competencies across all public services by linking silos of information across different levels of government and across borders.
- Consolidating out-dated or developing new systems to improve overall performance and capitalise on a more integrated, broader and more easily reached knowledge base.
- Improving liability and accountability and justifying risk through the establishment of informed decisions and also resolving issues more quickly, reinforced by access to transparent and integrated information across all managerial boundaries.

- Delivering improved and more cost effective fundamental services such as increasing partnerships with and awareness among the public.

All of the above-mentioned objectives lead to the sharing of knowledge which is consistent with the survey finding and provides access to expertise and knowledge. As a result, most KM activities establish the retention of lessons learnt and best practices. These activities can be applied to both practices within engagement with citizens as well as the with government agencies.

Government organisations are encouraged to explain and publish all of their non-sensitive public policies online. As the public expects to receive more transparent, open and responsive services from government organisations, they have to recover their ability to engage with the public effectively. Public discussion and public consultation are considered to be the appropriate processes for looking at the ideas, views, concerns and feedback of all stakeholders in establishing, developing and executing public policies and programmes (Chaudhary, 2014). In a large number of developed countries, it is apparent that a central government portal with feedback forums has been introduced, allowing them to engage fully with both citizens and organisational employees. This has usually been one of the first KM activities.

3.3 WHY KNOWLEDGE MANAGEMENT FOR KSA PUBLIC SECTOR ORGANISATIONS

Salwa, (2010) stated that KSA is one of those countries that is striving to establish a knowledge-based society and this provides a strong reason why the public sector organisations has been chosen for the formulation and implementation of KM. In addition, to this, there are several functional, operational and management related generic issues that provide the impetus for the implementation of KM in the public sector. These were identified by Ahmed (2011) using the Delphi technique, speaking to fourteen extremely eminent Saudi experts in KM. Collectively, their answers classified key obstacles to KM. Ahmed (2011) research leads to the classification of the following obstacles:

- Organisation barriers
- Leadership barriers
- Technology barriers
- Learning barriers

An increasingly well-informed population needs the public sector to have the best freshly generated knowledge, simply because their knowledge is growing swiftly and they have increasing numbers of notable players in the sector. KM relies on the idea that the most treasured asset of an organisation is the knowledge contained by its employees (Ahmed, 2011); an emphasis enforced by the increasing rate of change presently occurring in the corporate sector and in society in general.

According to Cardoso et al, (2012), KM has detected that ‘knowledge work’ is involved in almost all types of employment. Therefore, it has been recommended that staff should be

'knowledge workers'. This is a move away from the traditional reliance on the manual skills of the worker towards a situation in which the worker is valued for the knowledge they have. Thus, in any institute or corporation, the most significant interests and endeavours of any worker comprise utilisation of information, designing and contribution. In this age of advancement, the efficiency and value of government can be enhanced and fortified by utilising KM. On one hand the public sector and NGOs encounter these contests while on the other hand they also take good advantage of these changes which are proposed by the knowledge-based economy, globalisation and new development of ICT (De Angelis, 2013).

Four pillars of the Knowledge Economy (KE) framework suggested by Krstić and Stanišić, (2013) are as follows:

- An economic and institutional regime. It delivers criteria, inducements and better economic plans and these further encourage effective deployment as well as the sharing of resources. Creativity and incentives are also encouraged in order to use current knowledge, creation and dissemination.

- An educated and skilled population. This type of population has the capability to continuously modify, exalt and adjust their abilities so as to proficiently develop, reveal and utilise data.

- An effective revolution system of organisations, universities, consultants, research institutes. All of these organisations and institutes make people aware regarding rebellion of information. The stock of global knowledge is not only exploited by different people but they also adjust and integrate it according to local requirements.

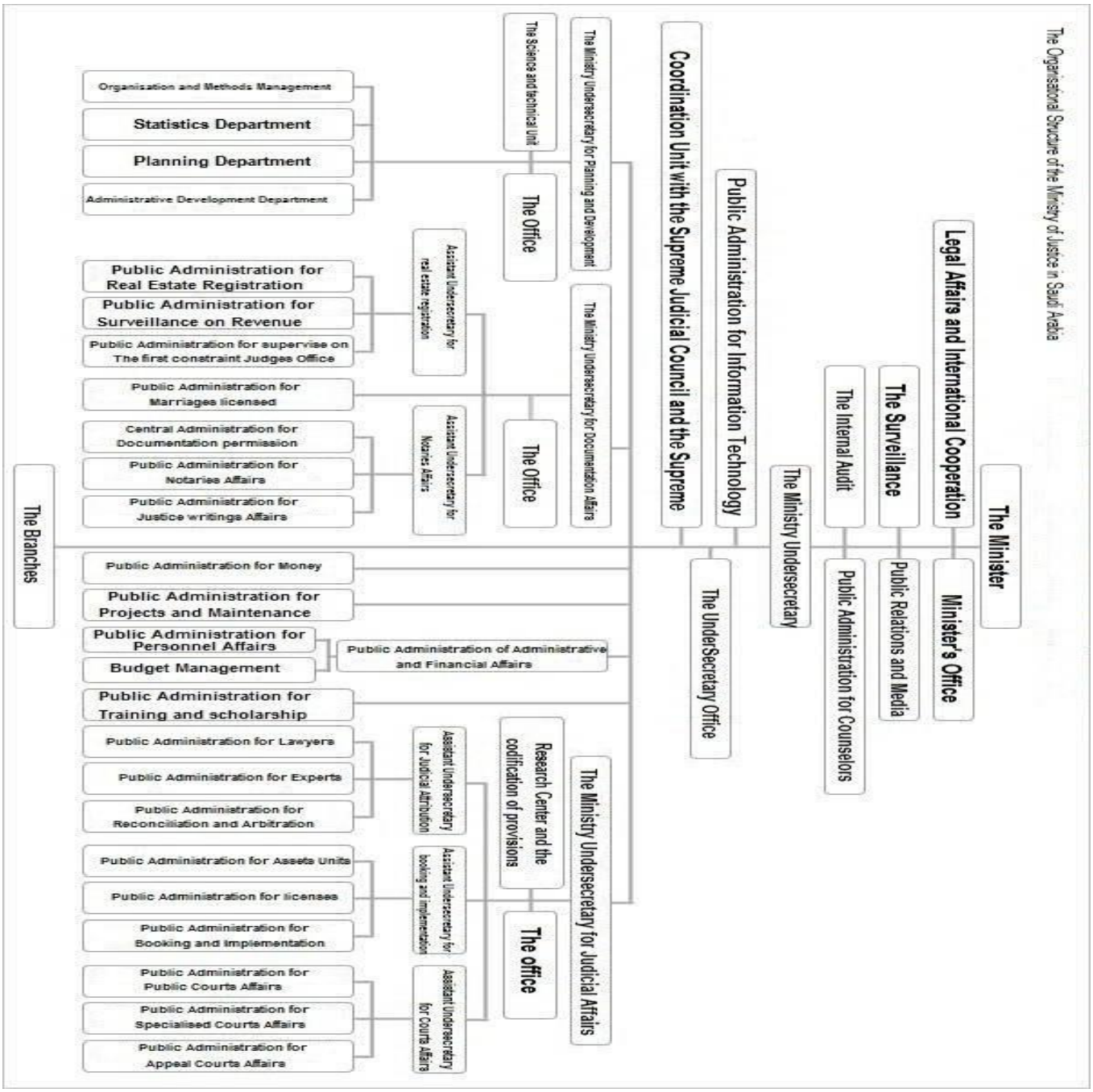
- A dynamic and modern information infrastructure. Efficient transmission, propagation as well as handling of data can be expedited through modern infrastructure (Krstić and Stanišić, 2013).

These four pillars of KE assist the establishment of the sharing and exploitation of data. Consequently, KSA has developed and adopted a specific set group of initiatives by following these four pillars. Additionally, these pillars can also enhance the worth that is included in provisions, properties and the level of Saudi economic development (UNDP, 2010).

3.4 OUTLOOK OF KSA PUBLIC SECTOR ORGANISATIONS: CASE OF MINISTRY OF JUSTICE

The future of KSA as a structural state and the position of the Ministry of Justice (MOJ) within that state is a very interesting study. For the MOJ to continue to be viable demands the application of KM to ensure their better functioning. First of all, the existence of twenty-five different departments within the MOJ reflects the comprehensive nature of this Ministry and the broad functioning of this ministry within the country. Financial management, arbitration management, budget management, the planning department, statistics management and general department of information technology are just some of the wide range of departments contained within the MOJ (Ministry of Justice, 2016). This structure of MOJ KSA reflects how a flow of information and knowledge sharing is an essential ingredient that can make or break the adequate functioning and decision-making of the ministry as the functions of this ministry are sensitive and require careful attention. Figure 3.1 gives the official structure of the Ministry and this is taken directly from their official website:

Figure 3.1: The Hierarchy of the MOJ



Source: Ministry of Justice, (2016a)

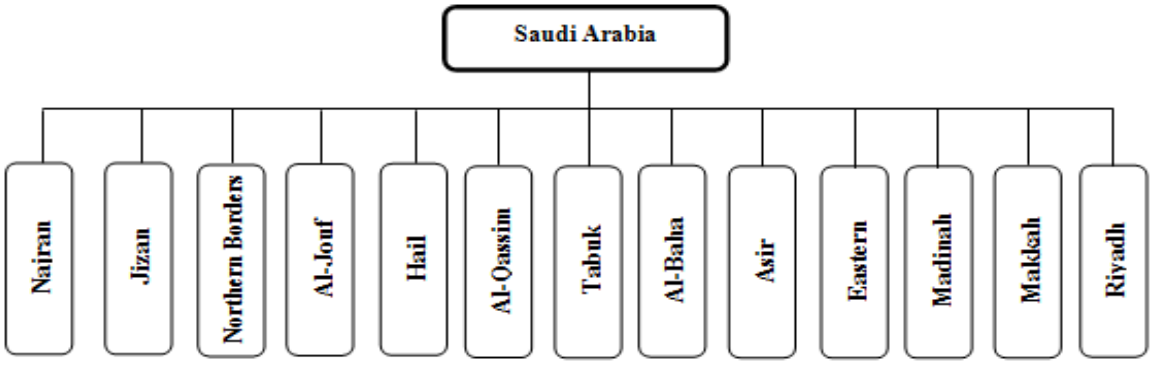
KM techniques and tools are vital in the context of this ministry because the frequent cooperation and interaction of these departments are essential for the smooth functioning of this ministry which naturally demands the implementation of KM approaches to enable its

staff and executives to display sustainable performance over a longer period of time. This point can be emphasised as the KSA consists of 13 provinces (Saudi Embassy, 2016). Below in Figure 3. is given the map of KSA showing the 13 provinces (their capital cities are listed in Figure 3.3).

Figure 3.2: The Provinces of KSA

Source: Saudi Embassy (2016)

Figure 3.3: The Provincial Capitals



Source: Saudi Embassy (2016a).

The MOJ has to deal with the operations and issues pertaining to all thirteen provinces which ultimately increase the demand to implement KM techniques across the ministry which will also extract the best out of individuals working in the ministry. Moreover, the MOJ also possesses a media centre that operates frequently to issue press releases and news related to

the ministry. Therefore, the outlook for the MOJ makes it clear that KM is needed by this ministry.

Sharia courts are the building blocks of the court system in KSA (Al-Farsy, 2009). This structure of the MOJ simplifies the ways for the people of KSA to choose regarding their cases. The department of General Directorate of Training and Scholarship is another vital element of the MOJ's structure because it develops the individuals working in the MOJ. Within the MOJ structure, the budgetary department is another key component which has been a centre of controversy in recent years. The Control department is another component operating under the MOJ; *i.e.* the agency documentation affair is a core component of the MOJ within which the control department works as a sub-component (*i.e.* as a control management agency). This department comes under the provision and authority of the Public Administration for Notaries Affairs.

This sub- department is also referred to as the Deputy Ministry for Documentation which signifies the importance of this component for the MOJ. This sub-department has also been connected with the General Administration of inquiries and studies. A range of tasks are performed by this department such as follow-up attendance through a request of daily or monthly leave and attendance data; *i.e*. virtue notaries in writing (Ministry of Justice, 2016b). This sub- department also prepares and studies essential reports related to these activities. The necessary reports are then prepared after investigation with notaries (Ministry of Justice, 2016b).

Public Administration for Research is one of the twenty five departments that function within the MOJ. This department tends to draw the established principles by the Court of Cassation (COC) in its principles or judgments developed by the Supreme Judicial Council. This department also prepares specific provisions of the publishing groups along with research preparation and they do this on the formal request of the Department of Justice.

Another task that this department performs is giving responses and answers to the judges' inquiries (Ministry of Justice, 2016c). The Department of Attorney is another important component of the MOJ which performs diverse activities on a regular basis. Working on the development and follow-up of the profession is one prime task that this department performs along with managing the lawyers' disciplinary committee. This department also gathers recruit advisers which are formal requests from outside the Kingdom. An important role performed by this department is the maintenance of close ties with international, regional and local organisations pertaining to the legal profession. The studies conducted by this department tend to initiate amendments and regulations pertaining to the legal system and profession (Ministry of Justice, 2016d).

3.5 CHALLENGES FOR KM IN THE PUBLIC SECTOR

KM is increasingly significant for the government as they deal with upcoming challenges faced by the KM economy. These challenges are addressed in the following phases (OECD 2003):

- Knowledge has become a basic determinant of intensity and competitiveness in the public sector. Administration conveyance and policymaking are the fundamental

errands for government. In an information economy, governments are progressively confronting competition in these areas at both the national and international level. For example, at the global level, non-government organisations and government organisations are in competition with remote organisations conveying comparable administration (OECD 2003). Exploration establishments compete to draw in the best researchers and subsidies while universities are progressively in rivalry to attract the most investment from abroad, the best students, best professors and the best educators. At the national level, rivalry among public bodies has been additionally expanded after the decentralisation forms. In the public sector, products and capital are not as paramount as in the private sector but knowledge seems to be. Knowledge is a vital component of rivalry and is a focal asset of the administration. Successful working of government rests on viable procurement and the spread of knowledge.

- Private organisations manufacture goods and offer services that increasingly provide intangible capital, competing directly with the public sector in order to deliver the goods and provision of services such as security, science, education and knowledge. For example, as stated by the OECD (2002), through coaching and distance learning of courses and information on the internet, private organisations are enhancing the influence of training for common citizens and to enhance public education as well; a service which was conventionally offered by the public sector. Because knowledge-oriented private organisations are meeting more customer demands and receiving more customisation, these organisations would also expect comparable advantages from the public sector.

- Retirement of civil servants and successive exchange of knowledge specialists across government divisions additionally present difficulties for the maintenance of information and safeguarding of institutional memory and the preparation of new staff. There is likewise increasing competition for talent with a capacity to impart learning.

3.6 KM CHALLENGES FOR THE MINISTRY OF JUSTICE KSA

The Saudi MOJ is in charge of the operation of 154 notary public offices, 272 courts and 13 regulatory branches. Approximately 1,600 judges are among the total staff of 23,000 and handle around 1.3 million cases in 1,000 listening rooms yearly. The Ministry has generally confronted difficulties in transforming huge quantities of cases rapidly, alongside issues such as checking IDs and providing administration in remote areas. These issues were exacerbated by non-existent or outdated system links in a few areas. Server centres had a tendency to serve only in regional or provincial business offices, hampering institutionalised administration conveyance. Finally, the Ministry confronted operational expenses connected with utilising diverse innovations as a part of distinct areas (Cisco, 2013).

3.7 THE FACTORS AFFECTING PUBLIC SECTORS TO IMPLEMENT KSA 2030 PLAN

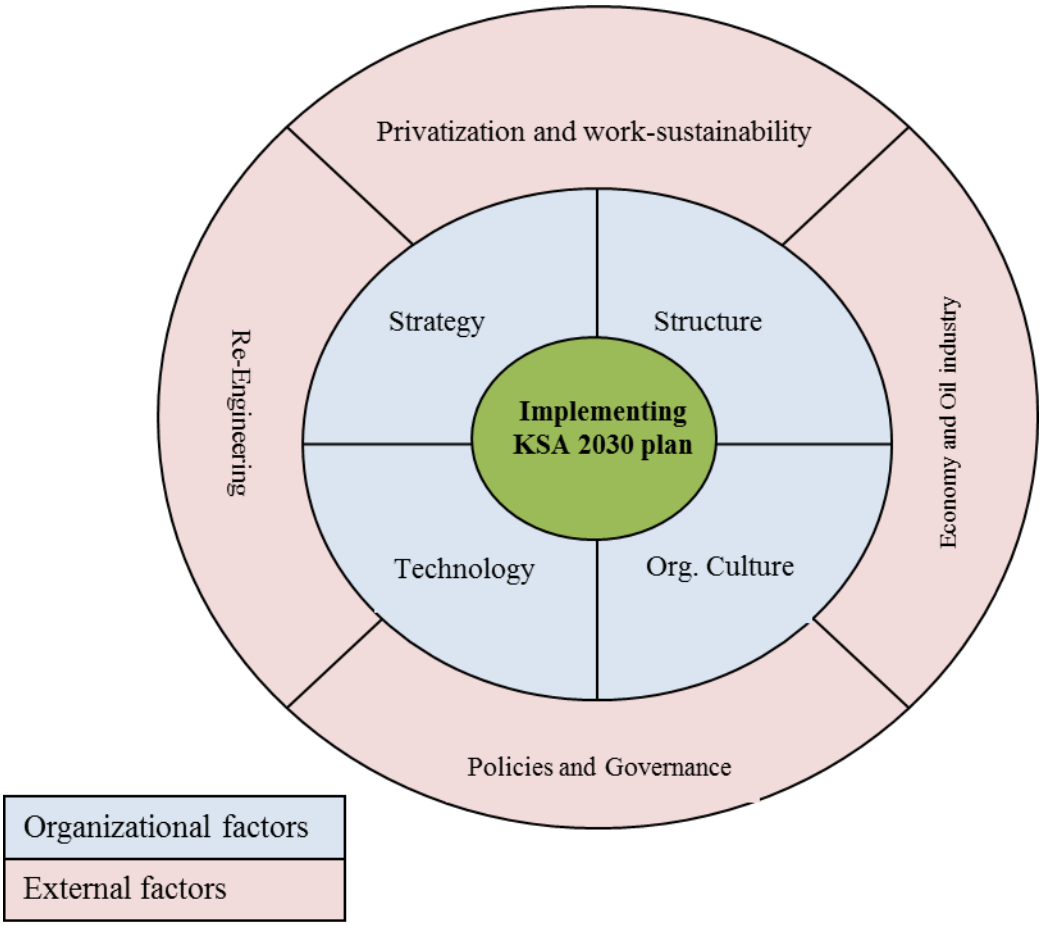


Figure 3.4: Factors effecting Public Sectors to implement KSA 2030 Plan

- **External Factors**
  - **Privatization and Work-Sustainability**

Privatisation has been considered as a solution in this regard as well. There has been an increase within privatisation within organisations operating in different sectors has been observed. It has been expected that this measure would help in developing the KM within organisations (Rabiean, 2016). The main advantages of privatisation is to force the private organisations to function more efficiently than the public sector (Beesley and Littlechild, 1983). The KSA has experienced privatisation for several reasons. According to Kocenda and

Svejnar, (2002) the economic development banks clearly force the GCC to privatize the public enterprises. However there are some internal challenges such as: the needs of adapting change; the creation of new job opportunities, the increment of income level and the effectiveness of productions factors.

According to Kocenda and Svejnar (2002) countries such as Germany, UK, Turkey, Malaysia, and China is firstly study and identify privatisation program which lead them to gain benefit from privatisation. However, in countries such as Pakistan and Bangladesh, privatisation programs have been facing different economic and social problem because the place less attention in the requirements before and after the implementation of privatisation programs. Due to the new vision, KSA are getting ready to implement different privatisation programs. According to Khaledi and Goodarzi (2016) there is a positive relationship between KM parameters and privatisation in private sectors.

Sustainability has been considered as one of the techniques suggested for improving KM within KSA organisations. However, the major factors that should be brought under consideration are developing a sense among organisations for proper utilisation of the resources available (Alshuwaikhat and Aina, 2006).

- **Re-Engineering**

Considering the factors that have been mentioned above, it can be stated that there is a need for adopting re-engineering within organisations. Considering that some major changes should be brought within infrastructure that should contain KM strategies and practices and should facilitate KM both internally and externally for KSA organisations (Rahali, 2012).

- **Economy and Oil industry**

There are various factors that affect the KM within public sector organisations in KSA such as the economic system of KSA (Alsereihy et al., 2012). According to Omotayo (2015) there have been certain steps taken towards making KSA economy a knowledge economy, however it has been stated that KSA still has a lacks in adopting this strategy compared with other GCC countries (Omotayo, 2015). The weaknesses of technological aspects are reported to be the main aspect that resisting the achievement of KSA strategy to adapt knowledge economy.

- **Oil Industry in KSA**

In addition to the economic system, KSA dependent on oil as the major components of its revenue is highly related to KM effectiveness in different sectors which are not related to oil industry. As a result KSA should think of switching from their reliability and dependency over oil (OPEC, 2016). By investing on other sectors, there would be certain improvement in KM within these sectors as well. There has been an increased focus upon KSA shifting from oil based to knowledge based economy. However the efforts that have been adopted are not sufficient enough for them considering that there must be increased focus and proper utilisation of the resources and opportunities that would be helpful in this regard, like adopting the latest technological development that has been adopted globally (Al-Kibsi *et al.* 2015).

- **Policies and Governance**

Policies are formed to decision making and officially adopted policy mostly takes the shape of a law, plan, action course, behaviour and main strategy making activities include the vision, the aims and objectives, the comprehensive plans for projects and services will be

provided, and the budgets and finances plans (Bryson *et al.*, 2018). The policy is range of laws and standards that aim to impact rules, regulations and procedures that be reflecting the agreed practice. The policies vary from the strategies in that they are statements, rather than high standard method achieving alters (Miller and Rose, 2017). This is what distinguishes politics from strategies. KM policy means the policy clarifying the knowledge required of the organization for its safety. It is based on mission of the organisation, key aims, and strategy plan (Batista et al., 2017).

Researchers investigating how companies operate have paid increasing attention to corporate governance and how this affects various aspects of firm performance: financial, administrative and environmental among others. However, remarkably little attention has been paid to the importance of board interlocking (Allam et al., 2018). Board interlocking is widely utilised in companies because of its ability to facilitate communication and make the most previous experience. Directors who gain experience at various different companies are more valuable and are especially well-suited to advising on strategic planning (Allam and Newman, 2018).

Saudi Arabia is an emerging economy and operates in a relatively closed economic environment. However, initiatives have been announced to help make the economy more open. At the same time, efforts have been made to modernise the corporate governance code, legislative system and corporate laws (Hamdan, 2018).

New corporate governance regulations were implemented by the Saudi Capital Market Authority (CMA) in 2017. These were specifically designed to enhance governance at listed firms by improving relations between directors, shareholders and executive directors. The

new regulations also seek to improve shareholders' rights (Hamdan *et al*. 2018). Furthermore, the regulations encourage engagement between companies and the national legislation system. Crucially, improvements in corporate governance not only benefit the companies involved but also the wider economy. This is because the regulations promote the importance of corporate continuity and this improves long-term economic performance, thereby helping to increase GDP and deliver the goals of Vision 2030 (Hamdan *et al*. 2018).

- **Internal Factors**
  - **Technology**

Technology has a crucial role in organisations activities such as creation, application, sharing, and diffused through the community (Akhavan *et al.,* 2018). Nowadays, there are innovative methods used for education is e-learning during individuals receive training by the Internet, in an environmentally-friendly, virtual environment (Akhavan *et al.,* 2018). So, e-learning involves the use of network technology by designing education programs, delivering lessons and implementing an educational setting.

  - **Strategy**

The strategy is a standard method to a matter that is prepared to alter by application policy (Miller and Rose, 2017). All organisations put strategic plans to serve them especially when they have not clear policies (Bryson, 2018). Sometimes strategy is an output by politics. However, it is also possible to put a policy from a strategic plan such as universities are considered the strategic plans as guides for operational actions (Kemp, 2018). Therefore, introducing KM initiatives in public sector organisations by formulating policy or developing a strategy (Masa'deh *et al*., 2017). KM strategy means guides actions and embed obligation

by workers of knowledge that plan for improvement and have sense of the organization outlook (Bolisani *et al*., 2017).

- **Vision**

Furthermore; Lack of proper planning, strategy and vision is another factor that has been negatively affecting KM implementation on KSA public sectors. Considering that there is a need for developing proper plan and strategic approach towards KM. As a result KSA organisations should develop a proper vision and plan that would help them to utilise their resources properly and effectively (Nurunnabi, 2017).

- **Mission**

A mission means what an organisation is, why it exists, its reason for being, who its main customers are, specifying what its outputs are, and specifying its geographical area of operation (Kreus and Saukkonen, 2018). Some staff in organisations do not have any idea about mission statements of the types of vision associated with KM policies (Alosaimi *et al*., 2018).

This stems from the fact that many people in organisations are unaware of the benefits that KM affords and do not appreciate the need to put in place structures for KM to be facilitated. Welch and Welch (2008) indicated that KM depends on the organisation's strategy, divided into tasks, such as the mission and vision of the organisation, as well as clearly defined goals.

Therefore, KM subordinated to the strategy adopted individually by the organisation, which means that there is no universal concept of knowledge management (Małecka, 2018). It is a multidimensional and complex process, created in relation to the theory of competitive advantage and based on available knowledge resources (Yu *et al*., 2017)

- **Priorities**

Over the past three years, Saudi Arabia has witnessed influential political and economic transformations and reforms that have exceeded many of the political experiences in the world (Hamdan *et al.,* 2018). The priorities were through internal reforms; give young people a chance to work in foreign policies, and strengthening relations with the world's influential countries (Hamdan *et al.,* 2018). Priorities at the level of foreign policy through the war on terrorism and Saudi Arabia has been founded the Islamic Alliance to fight terrorism and the militias of destruction and killing. It succeeded in attracting 41 Arab and Islamic countries to that end. In addition, the part of transformation by the huge economic vision 2030 with political incentives based on attracting international companies in all fields (Fattouh and Sen, 2016). So, Stakeholders learn about other groups' values, priorities, expertise and needs by transparent collaboration environment to improve creating collaborative (Garcia-Perez *et al.* 2018). It is the intention of the KSA government that effective cost management and greater efficiency will help to erode the fiscal deficit. Therefore, the government has launched a wide-ranging strategy in the form of Vision 2030 (Fattouh and Sen, 2016). Vision 2030 will be implemented using a detailed strategy referred to as the National Transformation Programme (NTP).

- **Initiatives**

The initiative is an idea and a new plan of action to address some issues or to achieve something (Batista and Quandt, 2017). Some initiatives came from top management or originated from the director or the team of human resources department. In contrast, some initiatives have been introduced in the organisations through isolated initiatives by the human resources, IT and document / information management departments, rather than by top management directives (Batista and Quandt, 2017).

- **Organisational Culture**

Not only the external factors, but there are certain internal factors as well that have been affecting the knowledge management within organisations and that includes the job culture of the organisations. The culture within organisations should also support the flow of information within organisations which would be helpful in this regard. Usually the environment and the culture within KSA are considered to have restrictions that affect the flow of information throughout (Katzenbach *et al.*, 2016).

- **Definitions of Culture**

Organisational culture is a collection of assumptions that has been adopted by a group of people as a way of adapting to the external environment and integrating internally. Importantly, this culture has been shown to be effective to those who use it and, based on this experience, it is taught to new members of the group as being an appropriate way to act and think when faced with certain challenges (Schein, 2004). However, if an organisation operates across different regions and encounters different cultures, it may be necessary to have numerous organisational cultures (Kotter and Heskett, 1992). Organisational culture is sometimes referred to as corporate culture and is concerned with how the members of an organisation behave. Indeed, it is organisation's culture that binds its members together (Hofstede, 1998).

- **Organisational Culture Development**

Teegarden *et al.* (2010) suggests that when a group of people work as a group towards a common goal, they develop a culture of their own. Meanwhile, Kotter and Heskett (1992)

assert that there are two levels of organisational culture: a visible and an invisible level. Organisational culture at the visible level has certain values or behaviours that new recruits can be taught such as to adhere to the rules and work productively. Meanwhile, at the invisible level there are certain norms and values that take considerable effort to teach to new recruits and are not easily changed. The Australian Government Department of Education's (2013) depiction of organisational culture as an iceberg with certain aspects that are clearly visible and others that are obscured:

Changing an organisation's culture is a complex and challenging task because certain elements are obscured and some employees are unlikely to be aware of the norms and values contained in the obscured part (Teegarden *et al*., 2010).

3.8 ORGANISATIONAL CULTURE AND LEADERSHIP

It is the leaders within an organisation who are responsible for creating and managing cultures (Schein, 1992; Kotnour *et al.* 1999). Moreover, it is leaders who are behind efforts to create effective systems and bring about change (Porter, 2004).

In any workplace, the style of leadership can be assigned to one of six styles. The first leadership style is authoritarian whereby the attention of the leader is on establishing a specific professional relationship with their employees. They dictate orders and supervise others in pursuit of their goals (Salin and Hoel, 2010). The second leadership style is paternalistic whereby the leader behaves as though they were a father to the employees. In return, these leaders are highly trusted by their employees (Erben *et al.,* 2008). The third type of leadership style is democratic whereby employees are invited to offer their opinions when making decisions. Some researchers in the empirical literature restrict this style of leadership

(Woods, 2010). Laissez-faire is the fourth type of leadership and this approach involves certain employees being given the authority to act as they see fit when decisions need to be taken (Johnson and Hackman, 2018).

The fifth style of leadership is transactional whereby employees are told what is expected of them, a reward system is put in place and collective action is pursued where necessary. The final type of leadership is transformational whereby the leaders set a vision for the organisation and the employees are motivated to help realise this goal. When pursuing transformational leadership, it is necessary for the leaders to persuade the employees to act in the organisation's best interest and not merely serve their own personal interests. This approach also requires followers being moulded to become the leaders of the future (Bass and Bass, 2008).

3.9 DRIVING FACTORS IN THE KSA PUBLIC SECTOR

Since 1970, the public sector in KSA has been in charge of enhancing the organisation of a boundless arrangement of courts and judges in a country the size of Western Europe (Library of Congress, 2006). Innovation is presently assuming an expanding part in institutionalising the business procedures of legitimate organisations and enhancing the business discernment, business information (BI) data accessible to judges and legal officials. Modernisation of the organisation of the courts and legal framework had the full support of King Abdullah and will continue under the rule of King Salman. His administration has distributed US$1.9 billion (Sar7 billion) to a reconstructing and updating project covering 478 legal offices (Stensile, 2012).

The undertaking involves making an IT framework at all court structures and public accountant offices in the kingdom. According to the Chief Information Officer at the MOJ, Mr. Majid Ibrahim Al-Adwan, they are working towards updating 400 new courthouses and public accountant offices. The objective is to modernise work reforms. An expanding number of the courts in the kingdom are currently joined with online services and brought together in the framework so that they can be checked and monitored through it (Microsoft, 2012, Wienroth *et al*, 2014).

The courts' organisation framework in KSA in recent years has created a system utilising Oracle running on physical servers. Reacting to the administration's approaches to the modernisation of business courses of action, the MOJ needed to further create and modernise its administrations through a heterogeneous environment including an alternate major vendor. In particular, it is expected to create a BI framework for courts and other legitimate administrations with open access for more substantial openness and a collaborative environment for public accountants. It additionally expects to redesign the IT infrastructure, including working frameworks and informing arrangements (Microsoft, 2012, Wienroth *et al*, 2014).

Driving factors in the public sector note that the sharing of knowledge is not a natural phenomenon in the corporate sector. It requires a psychological model transformation. A culture of knowledge sharing has to be formed to transform the behaviours and attitudes of individuals working in the organisation as well as to cut down barriers (Bolisani and Handzic, 2014). The suggested structure recommends the following to generate the required transformation:

1. Increase awareness of the advantages of KM. Staff and managers are supposed to be well informed about the changes and benefits that KM can offer them as well as their organisation. Although they feel and acknowledge the power of knowledge, they have to believe in the power of sharing knowledge (Bolisani and Handzic, 2014).
2. Increase the trend of knowledge sharing by building an environment of trust because when people know one another they are more inclined to share knowledge. More knowledge is shared by people if they are more trusting.
3. As an ideal, a leader should encourage knowledge sharing. A champion is required for KM implementation.

The KSA public sector should establish a formal system for rewards and recognition to foster knowledge sharing. Workers have to be formally rewarded and recognised, not just for knowledge sharing with others but also for their willingness to utilise the knowledge shared by others (Kim *et al*, 2014).

3.10 SUMMARY

When researching KM and its application within the public sector in KSA, the importance of this relatively new approach has been clearly demonstrated. There are several key points that have been concluded from the above discussion such as the importance of cultural, technological and communication challenges for effective KM ; i.e. both in the specific context of the MOJ and public sector organisations in general. Currently, government as well as non-government organisations throughout the world are facing a delay due to which some hurdles arise in KM. Exploitation of knowledge in services can be enhanced through KM which is integrated with their national systems, dogmas, rulings and strategies. However, hurdles and trials in KM agendas differ according to the situation of the respective country.

Some factors can influence and enhance the working environment of a country. The educational and cultural levels of any society, telecommunications infrastructure, technology, research and development, science and technology strategies are some of these key factors that can influence the working environment at large. It is concluded that managing knowledge is a complex process because as they are usually linked to long-term time horizons, a high level of uncertainty, and impacts that are often difficult to quantify. If public sector organisations do not fully comprehend what drives the need for managing knowledge, they may fall into the trap of creating an inefficient strategy and operational plans. It should be noted that for some public sector organisations the key drivers may vary.

To gain sustainable competitive advantage, it is necessary for decision makers to recognise and use a blend of ICT (Information and Communications Technology) and non-ICT based KM techniques and technologies. It is advisable to use conventional, simple, low cost, and easy to use with minimum training needs KM techniques and technologies.

CHAPTER 4: RESEARCH METHODOLOGY

4.1 INTRODUCTION

The purpose of this chapter is to set out the methodology employed in the current study. This includes specifying the approach to data collection as well as the data analysis techniques that will be adopted.

4.2 RESEARCH PHILOSOPHY

Research philosophy plays a central role in a research methodology because it determines the systematic approach by which the necessary data is to be collected. Csiernik and Birnbaum (2017) state that the research philosophy is at the heart of any research project because it helps to show the philosophical framework against the subject authenticity at the centre of the research being undertaken.

Meanwhile, Punch (2013) asserts that the competence of a research philosophy is governed by the methods adopted in order to ensure its implementation. The four types of research philosophy are as follows: interpretivism, positivism, pragmatism and realism.

The positivism approach to a research philosophy signals the creation and verification of a hypothesis by deploying appropriate statistical methods. In addition, when a research philosophy is grounded on positivism, it usually strives to recognise objective figures that result from making observations (Csiernik and Birnbaum, 2017). However, the philosophy of positivism in not appropriate for application in the current study because it can only be used to analyse data that can be quantified.

Meanwhile, the research philosophy based on interpretivism seeks to clarify how people behave in different social settings. As such, this particular research philosophy is concerned with understanding how systems are influenced by human behaviour. Consequently, this approach is deemed unsuitable for application in the current study owing to the fact that the research is concerned with the implementation of KM strategies in Saudi public sector organisations and there is no need to determine how human behaviour influences this. Therefore, an approach based on interpretivism was ruled out.

The merits of the realism-based research philosophy were also considered for use in the current study. It has previously been established that realism-based research philosophies are used to recognise direct and indirect variables for use in research studies (Csiernik and Birnbaum, 2017) but such an approach is really only appropriate when the research is based on scientific experiments. Consequently, this approach was not considered for the current study. Research philosophies based on pragmatism offer researchers the ability to view matters from various angles. This is beneficial in the current study because such an approach would help to identify the issues and challenges that impact on a particular phenomenon based on the creation of KM strategies.

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4.3 RESEARCH APPROACH

The research approach is the part of the methodology concerned with how primary and secondary research is conducted (Hayes *et al.*, 2013). As such, clearing setting out the research approach clarifies the direction that the study is to take so that the necessary data can

be amassed. Moreover, there are two sub-categories to the research approach which are the deductive and inductive research approaches.

The deductive approach is employed in order to help reduce the number of possible research objectives and reducing the number of potential problems by agreeing on suitable research questions and hypotheses at the outset of the study. Importantly, the deductive approach is appropriate when there is a need to consider an existing phenomenon from new perspectives. In addition, the deductive approach is appropriate when it is necessary to test hypotheses on a theoretical basis.

Meanwhile, an inductive approach is suitable when there is a need to investigate prevailing issues in a given community. It is the respective feature of the inductive approach that makes it indispensable to researchers (Haynes *et al*. 2013). As such, selecting an inductive approach creates opportunities to adopt assumptions concerning the obstacles to forming sustainable and smart cities in future. Moreover, opting for an inductive approach affords the researcher a considerably greater degree of flexibility than would otherwise be possible.

4.4 RESEARCH STRATEGY

The research strategy is concerned with putting into practice an agreed strategic plan for collecting and analysing data (Hill and Langan, 2014) and there are three widely-used research strategies. The first of these is grounded in a quantitative research design and uses close-ended questions that encourage the respondents to provide short and targeted responses. The second popular research strategy is the qualitative research strategy which typically involves the asking of open-ended questions and effectively invites the respondents to give

wordy, detailed answers to help address a given research problem. The detailed responses generated by the qualitative research strategy provides researchers with insight into the effect that independent variables have on the dependent variables.

However, it would be a mistake to claim that either the quantitative or qualitative research strategy is superior to the other because each has its merits (Mellinger and Hanson, 2016). Consequently, in some cases it is decided to adopt a mixed-approach.

In research methodology, the research design influences the strategic design that is then incorporated so as to ensure the study is rational and sufficiently far-reaching (Hughes and Sharrock, 2016). There are four core types of research design: experimental research design, descriptive research design, causal research design, and quasi-experimental research design.

4.5 SELECTING THE SUITABLE RESEARCH METHOD

Research is defined as the process by which a person attempts to find an answer to a question or a solution to a problem through a systematic methodology with the aid of an evident fact (Leedy and Omrod, 2012). It is not only a set of skills but a way of thinking, by looking at a situation inquisitively, analytically and critically so as to gain an in-depth understanding of its relevance, rational, efficiency and effectiveness (Kumar, 2014). The systematic way of achieving the solution to a problem is through a research methodology (Rugg and Petre, 2007). According to Grix (2010) research methodology is a systematic approach that describes how a piece of research should be undertaken to achieve certain objectives through the use of research methods. These research methods are techniques or processes employed by researchers to conduct, collect and analyse data (Kinash, 2006). Therefore, it is imperative

to first define the reason for conducting a research because the choice of a research method is inextricably linked to the research question asked and to the sources of data collected (Bryman and Bell, 2015). Research methods are techniques or processes employed by researchers to conduct, collect and analyse data (Kinash, 2006).

According to Peter and Cathy (2012), selecting research methods as an act of faith and not based on rational response to clearly formulated problems. Therefore Walonick (1997) states that for successful selection of appropriate research method, some basic factors have to be taking into account. These factors according to him includes the objective of the research, funds available for the conduct of the research, position of the research objective, language to be used especially for the research participants educational background.

Based on the above guide highlighted, and for the purpose of achieving this research, the quantitative method is chosen. The quantitative methods is chosen because according to Fellows and Liu (2015), quantitative method always intend to relate to positivism and strive to collect a genuine data, and the relationship between the data collected with the result of an already conducted research from review of relevant literature. Edmondson and McManus (2007) in Fellows and Liu (2015) state that unless there is a good understanding of a phenomena, any attempt to form measures that are suitably valid and reliable will prove troublesome. As such, there is a need to make sure that the subject under investigation is both comprehended and clearly defined by the researcher so that the variables can be measured accurately to produce reliable findings.

However the quantitative methods can use questionnaire, interview or combination of both. But for the purpose of this research, the questionnaire method is chosen. This is in line with the facts stated by Yin (2017) that questionnaire method are easily than the face to face

interview, and the fact that it is cheaper than the interview method as supported by Walliman (2006). A well-structured questionnaire can be used to collect data without the researcher necessarily going to the site. Also questionnaire survey presents better opportunity for generalization of result than the interview method. Therefore, the questionnaire method is considered more appropriate for this research despite its little limitations. The method is in line with the research design. The mixed method could have been appropriate since the questionnaire might not give the details of the questions. But still the questionnaire was chosen in consideration of the time, factor and distance of the study area.

Given the relatively new and unexplored nature of the research problem at hand, a quantitative method was adopted to collect and analyse data. The philosophical underpinning of this is based on objectivist-positivist paradigms. Questionnaire survey instruments have many advantages in the data collection process. They provide a larger geographical coverage for the sample population than case studies or semi-structured interviews could provide (Bourque and Fielder, 1995) and are cost-effective, efficient, and permit anonymity. The latter helps ensure that individuals' responses reflect their true beliefs and feelings—especially important in research involving attitudes. Because the researcher is not conversing directly with participants, they are unlikely to influence respondent answers. The questionnaire survey also provides a uniform situation for data collection, because each person is presented with the exactly the same method of inquiry, in the same manner (Bryman and Bell, 2015).

Be that as it may, there are known disadvantages associated with surveys. For instance, the responses they yield may not be sufficiently detailed because the researcher is unable to ask follow-up questions to better understand why they responded to the initial question in the way

that they did. In addition, posting out large volumes of questionnaires can prove expensive and such an approach takes a considerable length of time to complete.

4.6 DATA COLLECTION AND ANALYSIS

The selected data collection method must be capable of yielding suitable data in sufficient quantity within the time available. Hughes and Sharrock (2016) identify two different types of data collection methods: those used to collect primary data and those applied in secondary research. When conducting primary research, suitable data collection methods may include interviews, surveys and online polls. Research of this nature typically involves targeting a distinct population so that their responses can subsequently be analysed.

Conversely, when conducting secondary research, suitable data may be acquired from various sources including books, journals, business reports, case studies and industrial reports. In the current study, the decision has been taken to acquire the necessary data from a variety of secondary sourcessources.

4.7 SAMPLING METHOD

According to O'Leary *et al.* (2013) non-probability sampling methods are used when there is need to address something about people, places, objects, etc. or when there is need to answer the "how" and "why" questions. The use of convenience and purposive sampling methods were used to select respondents who are conveniently accessible. This will enable the researcher to easily, quickly and economically obtain data from the respondents (Saunders *et al*. 1997). These methods are used in distributing questionnaire to the targeted population.

Purposive sampling is a theoretical method of getting information from a sample population that one knows most about the subject matter (Walliman, 2006). These methods are used to obtain data from the selected case studies. In this study, representativeness will be ensured by adopting a purposive sampling technique (Tashakkori and Teddlie, 2006) which requires samples to be selected that are willing to participate and can be contacted with relative ease.

According to Black (2010), in convenience sampling, elements for the sample are selected for the convenience of the researcher, hence the researcher typically chooses target respondents who are readily available, nearby, or perceived as willing to participate. This was decided upon because there is no comprehensive, standard e-mail database of Public Sector organisations within KSA. Therefore, sources such as the Institute of Public Administration (IPA), King Abdul Aziz City for Science and Technology (KACST), and a more general search of the Internet were used to identify cases for inclusion in the sample. However, according to Bajpai (2010), this method eliminates the chance factor in the sample selection process, and therefore suffers from non-randomness.

4.8 QUESTIONNAIRE DESIGN

Perception is the way and manner which a respondent looks at a situation and has a great influence on the research due to biases, inclinations and the experience of the respondent in relation to the research (Starbuck, 2004). While Unwama (2012) further explain that perception can be balanced or unbalanced depending on the person that evaluates it. However, more experienced people in a given field of endeavour; consider things more accurately, positively and differently than the less experienced one.

Therefore when designing a questionnaire, the research question should not try disclosing private data. It should focus on clear fact and not confidential and private issues. The question should be simple, concise, direct and devoid of ambiguous issues in order to obtain unbiased responses. Therefore, adequate review of literature should be undertaken by the researcher to produce a comprehensive questionnaire (Starbuck, 2004).

While Torchim (2006) state that provision of a nice page of the respondent to the questionnaire will add value during the data analysis as it will give room for categorisation. Hence, the questionnaire for this research contains all-inclusive demographic information of the respondents.

The KM drivers, KM strategies, KM challenges, KM techniques and technologies, and KM benefits for KSA public sector organisations were identified from the review of the existing literature with their pros and cons and are used in the questionnaire for the respondents to select the one(s) commonly used in their sector.

4.9 SELECTING SCALE

Fellow and Liu (2015) noted that Likert scales are concerned with determining respondents' degrees of agreement or disagreement with a statement on, usually a 5-point or 7-point scale. A general problem occurs in the application of opinions or attitude scales in questionnaire surveys: respondents tend towards the neutral position. That is, when asked to strongly agree or strongly disagree on a 5-point or 7-point scale, many respondents would prefer to choose 'neither agree nor disagree'. Analysts often exclude neutral responses from their analysis, thereby risking the exclusion of valid responses. The disadvantage for the survey is that it

reduces the quantity of data. It also reduces the quality of the remaining data. Another similar problem is one of differentiation.

If a respondent does not have a particularly strong opinion on a particular matter, they will typically opt for a neutral response. This same response may be selected if the participant failed to understand the question, didn't know the answer to the question, or considered the question to not be applicable. In such cases, the participant may decide that it is better to give a neutral response rather than leaving the question unanswered. So as to avoid the possibility of neutral responses, the decision has been taken to use a four-point Likert scale. For instance, when the participants are invited to indicate the level of effectiveness in the Saudi public sector that can be attributable to KM, they will be faced with the following options: 1 – not at all effective; 2 – fairly effective; 3 – effective; 4 – very effective. Such an approach removes the possibility of receiving neutral responses (See Appendix A).

4.10 DETAILS OF QUESTIONNAIRE

The postal survey questionnaire was designed and developed in five parts. Part I was developed to elicit demographic information such as respondents job title/position and organisation size. Part 2 was developed to elicit data related to key reasons for implementing KM initiatives. Part 3 was developed to elicit data related to key KM initiatives that have been implemented, planned, or not to be implemented in KSA public sector organisations. Similarly, Part 4 was developed to elicit data related to usage and effectiveness of key techniques and technologies for managing knowledge in the KSA public sector organisations whereas Part 5 was designed to elicit data related to key challenges for implementing KM initiatives. Part 6 was developed to elicit data related to benefits of KM practices on

competitiveness. At the end of the questionnaire, a blank area was deliberately left so that the participants could offer any additional comments that they thought may be useful to the research or on the questionnaire in general. When conducting the survey, the respondents were required to provide their contact details so that a copy of the results could be sent to them upon completion of the study. At the end of the questionnaire, the respondents are thanked for their time and effort and a return address is provided.

The design format selected for the initial questionnaire was pre-tested to ensure that readers could understand the text without difficulty. In addition, this process provided an opportunity to reveal any errors and gain a better understanding of how long it would take a participant to complete the postal survey questionnaire (Easter-Smith, *et al.* 1991). According to Prakash and Joseph (2014), pilot study on a questionnaire give an opportunity for cross checking the wordings of the questionnaire to ensure that there is no use of ambiguous questions in evaluating the efficiency of the respondents. Therefore, all questionnaires needed to be piloted by a small number of surveyed (Fellows and Liu 1997 in Prakash and Joseph 2014).

However, the questionnaire was tested to determine its reliability to generate the required information as stated by Prakash and Joseph (2014) is to discover whether or not, the questions are understood so that the discovery of any problem that might arise during the filling of the questionnaire should be tackle since the researcher will not be there when the respondents will be filling the questionnaire. Therefore, due to time constraint, the questionnaire should be properly crosschecked by the supervisor to ensure it clarity before approval.

In this study, the pre-test involved five individuals. Of the five, three were from public sector and two were from academia. This involved taking the entire survey questionnaire and making notes of any questions or comments that occurred to them whilst completing the task. As a result, it was possible to identify a number of grammatical errors and suggestions were received relating to the choice of layout and these were acted upon. It was determined that no particular question caused problems for the respondents and all were generally well understood.

Valuable time of the respondents is required when answering a questionnaire, since the respondents will be required to spear some of their time to fill the questionnaire despite their engagements (Trochim, 2006). Therefore when designing questionnaire, the researcher should make sure that time required to complete the questionnaire is not more than necessary.

The key issues of the research should be the focus, and anything that is irrelevant should be avoided. Making the objectives clear can attract positive responses especially when they happen to be of interest to the respondents. This is because the respondent will then be ready to take more of their time to provide useful answers (Unwana, 2012). Hence the respondents to this research are purely professional in the KSA public sector organisations. Therefore believed that the research affect them directly and will be ready to provide genuine responses while the length of the question should be kept short as possible. The total time required for participants was approximately twenty to twenty-five minutes to complete the questionnaire. A copy of the final version of the survey questionnaire is included in Appendix A.

4.11 ETHICAL APPROVAL

Ethical approval is an important aspect to be considered when conducting a research be it laboratory or a field research. This is because it is concerned with ensures that the people associated with the researcher that affect them either physically or emotionally (Abdulai and Owusu-Ansah 2014). According to O'Leary *et al*. (2013), the researcher for the protection of the participants against any conduct of his research is very important. However, Biggam (2015) states that "research ethics is the moral code of conduct when human participations are the focus of empirical issues." Therefore when the researcher is designing the study, consideration should be giving to ethical issues. Meanwhile, Fellows and Liu (2015), consider research ethics to be the moral principles that help to shape a research project throughout the entire process. Therefore the researcher should do everything possible to ensure that the interest of the respondents or participants should be protected. Coghlan and Brannick (2014), states that ethical issues are not harming the participants, but about been truthful to the whole process. Furthermore, Curtis and Curtis (2011) explain that there is the need for all the participants to have voluntary consents as to their participation in the research. The principle of informed consent here refers to the process of giving the participants full details about what is required of them so that they can make an informed decision about whether or not to participate in the study (Curtis and Curtis, 2011 and O'Leary *et al.* 2013).

Biggam (2015) stated that there are some basic ethical principles that every good research should meet. These principles are transparency, confidentiality, voluntary participation, Doing no harm, and impartiality. Abdulai and Owusu-Ansah (2014), makes it clear that for any research that involves human participation, an ethical approval must be obtained from the

researcher's institution. Therefore, for the purpose of this study, an ethical approval form was filled by the researcher and then submitted to the ethics committee of the School of Architecture and Built Environment, Faculty of Science and Engineering University of Wolverhampton, through the supervisor for approval.

4.12 CHARACTERISTICS OF THE RESPONDENTS

Survey invitations were e-mailed to respondents requesting that they submit their views via an online survey hosted at https://survs.com/survey/ko8yrsk0sm. Overall, a total of 107 fully completed and usable questionnaires were received. Saunders *et al*. (2009) argue that a minimum number (i.e., effective responses) for statistical analysis should be 30 responses. Therefore, 107 responses were deemed appropriate for a survey of this kind. Of the survey responses, 43 were from managers, and 64 were from directors. A relatively large percentage (60%) of survey respondents therefore occupied directors' roles within their organisations. Based on designation and professional background, it is reasonable to infer that respondents held adequate KM expertise within Public Sector organisations within KSA, and all were of a maturity and sophistication to understand the questionnaire and its relationship to the research aims.

Figure 4.1 provides a profile of the organisations participating in the postal questionnaire survey. Survey respondents included 6 general directors, 20 administrator managers, 2 marketing directors, 20 financial directors, 20 legal directors, 8 legal managers, 10 human resources managers, 16 human resources directors, and 5 general managers. The Cronbach's α statistics were in the range of 0.81–0.93. This implies a high degree of internal consistency

in the responses to the individual measures, as α values above 0.7 are acceptable indicators in this respect (Nunnaly, 1978).

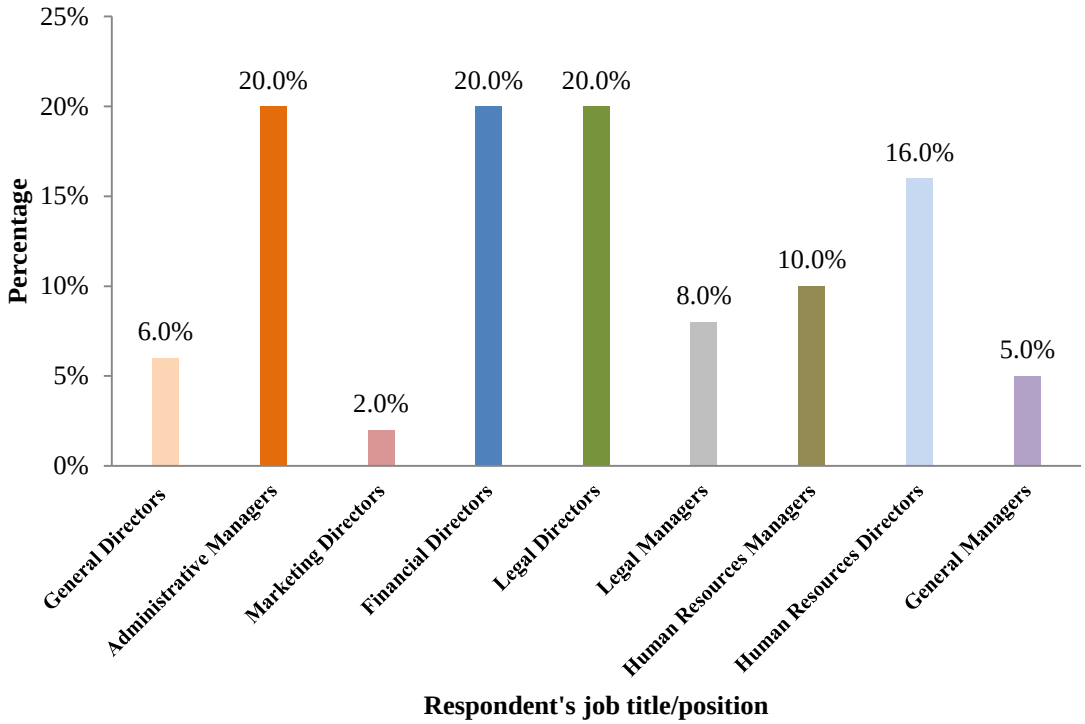

Figure 4.1: Profile of postal questionnaire survey respondents

- **Statistical Procedures and Methodology to Interpret Data**

Creswell (2014) describe descriptive statistics as a method of data analysis that presents and summarizes data in such a way that they became meaningful for the purpose of the study in question. Therefore, they provide the only description of the data and do not provide the means of making inferences about the result. Descriptive methods that describe the data through measures of central tendency such as means, median and modes; while the measures of dispersion as standard deviation and variance are used. They are used for finding the relationship and correlation between variables. Statistical instruments are used in analysing

numerical data through the assessment nature of data collected to describe and present the results (Walliman 2006).

Whereas inferential statistics, method of data analysis is used for testing hypothesis so that conclusion can be made about a population. Creswell (2014), states that when a researcher is to use inferential statistics, it will involve the use of various techniques such as regression, Chi-square, t-test and confidence limit. The researcher will then summarise the results and draw conclusion, identify problems, limitation, implications and finally suggest solution in written form.

In this study the researcher first organised the raw data, then carried out statistical analysis using version 21 of the Statistical Package for Social Sciences (SPSS) for Windows, including descriptive statistical analysis and others. The following procedures were accomplished in processing and interpreting the data: a coding system was designed and numbers were assigned to each question; all questionnaires were reviewed for accuracy and credibility and consolidated into a file; data was entered directly into an SPSS 21.0; database for initial data entry as well as document/archival for future use; data was quality-checked for entry accuracy; using the power of the SPSS 21.0 database format, data was retrieved in the desired set; and data results were then interpreted into descriptive statistics in SPSS 21.0 and transferred into MS Excel for ease of prioritising and tabular representation.

These included descriptive statistical analysis and the t-test to compare equality of mean responses between managers and directors. This test is appropriate for comparing the means

of two large, independent samples; two independent samples of any size; two dependent samples; or a sample mean and a known mean (Weiers, 2011).

Cronbach's α was calculated as a way of determining the internal consistency, or average correlation of items, in the questionnaire to gauge its reliability (Nunnaly, 1978). The Cronbach's α statistics were in the range of 0.81–0.93. This implies a high degree of internal consistency in the responses to the individual measures, as α values above 0.7 are acceptable indicators in this respect (Nunnaly, 1978).

4.13 THE DEVELOPMENT AND VALIDATION OF KNOWLEDGE FRAMEWORK

Various factors were taken into consideration when devising the framework including the findings from the empirical literature review. The resulting framework was validated by 5 senior professionals who had in excess of 20 years' experience of working with KM initiatives in the public sector. Each of these professionals had been sent an email clarifying the objectives and aims of the current study. In addition, the selected framework was included in the email.

4.14 SUMMARY

This chapter provided an overview of the research methodology and also explains why and how quantitative methodology was adopted for this research study. Descriptive and t-test analysis was used for analysing quantitative data. Results from the analysis of quantitative data are discussed in Chapter 5, Chapter 6, Chapter 7, Chapter 8, and Chapter 9. The next

chapter (i.e. Chapter 5) will discusses the key drivers for managing knowledge in the KSA public sector organisations.

CHAPTER 5: KEY DRIVERS FOR IMPLEMENTING KNOWLEDGE MANAGEMENT INITIATIVES

5.1 INTRODUCTION

This chapter focuses on the key drivers that have fuelled the need for managing knowledge in KSA public sector organisations. This study revealed twelve key drivers for managing knowledge in KSA public sector organisations. They are: to reduce operating costs, top management commitment, to improve the organisation's effectiveness, to improve access to key knowledge, to identify knowledge assets, to improve the flow of knowledge, to improve the competitive advantage, to help integrate knowledge, to improve the capture and use of knowledge, to improve sharing of knowledge, to improve employees productivity and to protect loss of knowledge due to workers' departures. The findings are also substantiated with relevant literature. Section 5.2 presents an analysis of the empirical data in relation to the key drivers for managing knowledge in KSA public sector organisations. Four key drivers were revealed. Each of these key drivers is discussed at two levels (aggregate and sector level) in sub-section 5.2.1 to 5.2.10. In doing so, section 5.2 addresses the first research question of the current study, "what are the key drivers that have fuelled the need for managing knowledge in the KSA public sector organisations ?". Section 5.3 summaries the findings. Overall, chapter 5 addresses first research objective which is "to explore and document the key drivers for implementing knowledge management strategies in the KSA public sector organisations" (See page 16).

5.2 KEY DRIVERS FOR MANAGING KNOWLEDGE IN THE KSA PUBLIC SECTOR ORGANISATIONS

Through the online survey, respondents were asked to indicate the key drivers for managing knowledge in KSA public sector organisations on a 4-point Likert item: "Very Important" (4), "Important" (3), "Fairly important" (2) and "Not at all important" (1). It is apparent from Table 5.1 that the five most important drivers for managing knowledge include: to improve access to key knowledge (3.56), to improve employees productivity (3.55), to improve the organisation's effectiveness (3.54), to protect loss of knowledge due to workers' departures (3.42), and top management commitment (3.40). Whereas, the five least important drivers include to reduce operating costs (3.16), to help integrate knowledge (3.17), to improve sharing of knowledge (3.25), to identify knowledge assets (3.27), and to improve the flow of knowledge (3.30).

Table 5.1: Key drivers for managing knowledge in the KSA public sector organisations

No.	Key drivers for managing knowledge	Overall Importance	Rank	Directors	Managers	t_{cal}	Significant value (ρ)
1	To reduce operating costs	3.16	12	3.09	3.27	-1.118	0.265
2	Top management commitment	3.40	5	3.34	3.48	-0.916	0.361
3	To Improve the organisation's effectiveness	3.54	3	3.51	3.62	-0.808	0.420
4	To improve access to key knowledge	3.56	1	3.48	3.67	-1.404	0.163
5	To identify knowledge assets	3.27	9	3.23	3.32	-0.617	0.538
6	To Improve the flow of knowledge	3.30	8	3.32	3.32	0.016	0.987
7	To improve the competitive advantage	3.33	7	3.21	3.48	-1.728	0.086
8	To help integrate knowledge	3.17	11	3.48	3.09	0.777	0.438
9	To improve the capture and use of knowledge	3.36	6	3.31	3.44	-0.790	0.431
10	To improve sharing of knowledge	3.25	10	3.25	3.25	-0.011	0.990
11	To improve employees productivity	3.55	2	3.48	3.65	-1.130	0.260
12	To protect loss of knowledge due to workers' departures	3.42	4	3.37	3.48	-0.668	0.505

The t-test for equality of means was carried out to investigate if there were any significant differences between 'Directors' and 'Managers' insights on the drivers for managing knowledge in KSA public sector organisations (at the 0.05 significance level) (refer Table . 5.1). Results here show that all drivers, are not significant (>0.05), and therefore, there are no significant statistical variations between the responses of the 'directors' and 'managers'.

5.2.1 To improve access to key knowledge

From the results of the current study it is apparent that, with overall mean value of 3.56, to improve access to key knowledge is the most important drivers for managing knowledge in the KSA public sector organisations. It was thought that this offered the best way to provide decision makers with the knowledge they require. It is quite conceivable that an organisation could generate such a large volume of tacit and explicit knowledge relating to sustainability initiatives that it becomes problematic to manage this information in a practicable manner (Staab, 2001). Many organisations are widely distributed and this makes it considerably more difficult to gain a clear appreciation of the knowledge contained within that relates to sustainability initiatives. It has been found that sixty per cent of employees struggle to access undocumented knowledge (KPMG, 2003). Industry professionals typically struggle to access core knowledge relevant to knowledge-intensive activities including decision-making and problem solving. In such a scenario, there is a clear need for KM to highlight the knowledge assets within the organisation, thereby making it easier to locate and utilise this expertise.

5.2.2 To improve employee productivity

From the results of the current study it is apparent that, with overall mean value of 3.55, to improve employee productivity is the second most important drivers for managing

knowledge in the KSA public sector organisations. The ongoing technological revolution has led to the roll out of digital connectivity and public sector organisations throughout the world have been compelled to exploit information and communication technology (ICT) in a bid to enhance the productivity of their employees, boost disclosure, encourage greater accountability and enable much-needed reforms (Tambyrajah and Al-Shawabkeh, 2009).

Government agencies are effectively knowledge-based organisations. Therefore, local, regional and national government organisations in KSA must take the steps necessary to develop and implement KM. Most countries have placed KM at the forefront of their e-government plans (Yahya and Farah, 2009). Indeed, the need to enhance the productivity of employees in the public sector is becoming more widely recognised (Brown and Brudney, 2003). If this was acted upon and employee productivity subsequently improved, this would significantly improve how these organisations advance and develop.

5.2.3 To improve the organisation's effectiveness

It is evident from the Table 5.1 that, with overall mean value of 3.54, to improve the organisation's effectiveness is the third most important drivers for managing knowledge in the KSA public sector organisations. There is an urgency for public sector organisations to amass knowledge from their key personnel and reflect on activities so as to learn from what has been found to be successful and also from what has not worked out as intended. By doing so, public sector organisations will be better able to improve their productivity. As part of this process, KM can effectively promote innovation while delivering performance enhancements that will benefit the entire organisations (Batista and Quandt, 2017). This takes us onto an additional motivator which is the desire to make an organisation more effective in order to deliver performance gains. When an organisation achieves sustained improvements in its performance, this usually involves the effective deployment of its tangible resources but also

a concerted effort to manage its knowledge base (Batista and Quandt, 2017). Yang (2011) stated that the effective utilisation of KM requires knowledge to be recognised, amassed and utilised in a way that benefits its performance and creates additional business opportunities. As markets evolve, development times shorten, as do product lifecycles. This creates a role for KM which can help to facilitate the research and development needed to shorten development times, survey customer opinions and monitor the activities of competitors (O'Leary *et al*. 2013; Armbretch *et al.* 2001; Liebowitz, 2002; Chua and Banerjee, 2013; Love *et al*., 2005). From a resource-based perspective, when an organisation shares its knowledge resources across all of its departments and employees, this has been shown to enhance the effectiveness of underperforming divisions, thereby bringing them closer to best practice.

5.2.4 To protect any loss of knowledge due to workers' departures

Protecting the organisation against a loss of knowledge when individual employees depart was recognised as the fourth-most important factor for managing knowledge (mean score of 3.42) in the KSA public sector organisations. Rather than trying in vain to retain employees, organisations are realising that the most practical approach is to manage knowledge (Dalkir, 2013). When it becomes apparent that an employee intends to leave the organisation, they are usually invited to complete a survey or engage in an interview. Through this process, the organisation seeks to retain knowledge that has been acquired as a result of the investment that has been made in that individual.

KM offers an effective method for harnessing knowledge that would otherwise be lost when an employee departs. Similarly, when a reorganisation takes place, this can curtail

relationships that have previously provided the means for knowledge to be shared in an informal way. It may also be the case that organisations have a large number of employees nearing retirement and their knowledge and experience must be captured and disseminated before their departure. An ageing and mobile workforce may well contain knowledge that is critical to the organisation's core competences and recognition of this could provide the impetus needed to implement KM (Johne, 2001; Wilson, 200; Ellis and Rumizen, 2002; Liebowitz, 2002 Mason and Simmons, 2014; Widmer *et al.* 2005). In order to reduce the loss of talented workers, an organisation must provide its employees with a suitable work environment (Batista et al., 2017). This includes appointing each employee to an appropriate position within the organisation so as to make them more comfortable and productive (Giampaoli *et al*., 2017). This helps to reduce employee departures. Effective leadership is required to avoid a loss of knowledge from an organisation (Batista and Quandt, 2017).

5.2.5 Top management commitment

The commitment of top management was recognised as the fifth most important drivers for managing knowledge in KSA public sector organisations. The absence of commitment from top management, effective KM implementation will not be maintained over the long-term (Chandrasegaran *et al*., 2013). Indeed, it has been noted that a lack of commitment from top managers is one of the main barriers to the implementation of KM (Batista and Quandt, 2017). Effective support from top management facilitates the sharing the knowledge. This includes the provision of appropriate incentives and recognition to encourage the dissemination of knowledge and the creation of a supportive environment (Yao *et al*., 2007). Employees are more likely to make a positive contribution if they are encouraged to do so by top management and this adds greatly to the value of knowledge (Lee *et al*., 2006). Furthermore, it is the responsibility of top management to recognise the significance of

adopting new technologies and invest in these in an appropriate manner (Hosseini *et al*., 2014).

5.2.6 To improve the capture and use of knowledge

A desire to enhance the capture and use of knowledge attracted a mean value of 3.30. By embracing knowledge capture, the organisation is demonstrating its awareness that its employees are a reservoir of knowledge and that this knowledge needs to be captured and stored/retained in such a way that it can be used in future. There are various methods that can be used to capture knowledge such as interviews and mind-mapping but Fenz (2012) believes that the most efficient approach is to exploit software packages to form 'enterprise portals.'

Capturing knowledge extends to cultural approaches that are common throughout the organisation with agents for change active at all levels. Knowledge capture requires the knowledge transfer capability of each individual to be exploited to the full. Knowledge must be captured without causing tension and, if successful, will afford the organisation a commercial advantage (Lu *et al*., 2006). This can prove problematic if an employee believes that the organisation is attempting to capture their knowledge without paying fair compensation. Also, before an organisation attempts to capture the knowledge of its employees, it must take steps to ensure that this knowledge exists. Having done so, the organisation must manage this knowledge just as it would take care of any other asset. The sub-sections mentioned here contribute to this goal by delivering KM.

The capture of knowledge within an organisation functions as a system that amasses knowledge both from within and outside the organisation. This system exploits the knowledge of various stakeholders such as customers, suppliers, consultants, competitors and

recent recruits (Becarra-Fernandez and Sabherwal, 2010). In practical terms, knowledge capture requires all stakeholders to become engaged.

5.2.7 To improve competitive advantage

To improve competitive advantage is identified as other important drivers for managing knowledge in the KSA public sector organisations. KM is a process involving the acquisition and exploitation of intellectual capital to provide a competitive advantage and promote customer loyalty by means of innovation, efficient operations and appropriate decision-making (Yeh and Ta, 2005). Moreover, if a competitive advantage can be sustained over time, the organisation will outperform its rivals.

Nejati *et al*. (2010) stated that human capital underpins the relationship between KM and an organisation's competitive advantage. This is because an organisation's employees are increasingly being recognised as its most valuable asset. The factor that will determine whether the competitive advantage can be sustained over time is the breadth of knowledge within the organisation; it is not sufficient to have a good grasp of the organisation's own products or services, rather it is the additional information they hold that will determine the advantage they possess.

For instance, do they have good knowledge of the organisation's competitors, political developments or the markets in which they operate. Even if they do have such knowledge, any competitive advantage will be short-lived if that knowledge is not managed in an appropriate manner. One of the strongest arguments in favour of embracing KM is to preserve the organisation's breadth of knowledge (Liebowitz, 2005) and ensure that it knows how best to utilise this resource (Knowledge Mapping).

Knowledge is the most valuable asset of an organisation when seeking to establish a competitive advantage and this is especially true when operating in a knowledge-based business line (Grant, 1996). Similarly, Nonaka (1991) devised a model to demonstrate the role that KM plays in establishing a competitive advantage: 'If knowledge is a vital resource for establishing competitive advantage, then management obviously should try to identify, generate, deploy and develop knowledge'. Therefore, managers need to know more about KM.

A combination of factual knowledge, skills and principles collectively help to develop a competitive advantage provided that knowledge is disseminated throughout an organisation (Stonehouse and Pemberton, 1999). KM is the acknowledgement, optimisation and concerted management of intellectual resources in a bid to improve productivity, add value and establish a competitive advantage that can be preserved in future (Webb, 1998).

5.2.8 To improve the flow of knowledge

With an overall mean value 3.30, to improve the flow of knowledge is other key driver for managing knowledge in the KSA public sector organisations. If knowledge does not flow freely then the organisation will not realise its full potential in terms of its performance. This provides a motivation for top management to embrace KM practices so as to garner a competitive advantage (Teo, 2005). Implementing KM practices through the promotion of knowledge flows facilitates innovation (Mehta, 2008). The importance of competition cannot be over-emphasised and when managers are new to an organisation having left a rival with fully functioning KM systems, they are in a good position to assess what effect the free flow of knowledge has on organisational performance. If a suitable KM system is in place, knowledge will flow freely throughout the organisation and this will make it less troublesome to accommodate changing trends.

If the flow of knowledge within an organisation is poor, the result will be that the organisation is prone to reacting to external developments and emerging trends. Such a scenario will require more adept management skills. Providing on-the-job training produces staff that are better skilled and who are also better able to learn. It also promotes further interaction between staff members, thereby helping bonds to form between people that help knowledge to flow and information to be passed throughout the organisation (Gope *et al*., 2017).

5.2.9 To identify knowledge assets

To identify knowledge assets (overall mean value of 3.27) is the other key driver for managing knowledge in the KSA public sector organisations. Not only the knowledge is main asset of organisations, its influence extends into the organisation's routines, best practices, decision-making processes and creative processes that are not easily replicated by competitors (Renzel, 2008; Hosseini *et al*., 2014).

Hosseini *et al*. (2014) suggested that it is the interactions between people, processes and technologies within an organisation that determines the structure that KM takes. Ultimately, it is the people who drive the sharing of knowledge by creating, sharing and applying knowledge. If people are unwilling to share their knowledge then KM cannot succeed. A related factor is the trust that people require in order to be persuaded to participate in sharing knowledge. Again, a lack of trust will prevent KM from succeeding. This is important for large organisations in which it can be significantly harder to engender trust in relationships (Serenko *et al*., 2007).

5.2.10 To improve the sharing of knowledge

With an overall mean value 3.25, to improve the sharing of knowledge is other key driver for managing knowledge in the KSA public sector organisations. Amayah (2013) noted that public sector organisations must encourage the sharing of knowledge if they are to remain effective and operate efficiently. Indeed, knowledge sharing is related to many aspects of an organisation including its culture, performance, competitiveness and the behaviour of its employees.

If knowledge is shared among the employees of an organisation, this improves the organisation's effectiveness and facilitates further social engagement that benefits the creation of knowledge and organisational learning (Islam *et al*., 2015; Moon and Lee, 2014; Wang *et al*., 2014; Abualqumboz *et al*., 2017). It may also be worthwhile exploring the quantitative relationship between the sharing of knowledge, organisational performance and innovation.

Knowledge sharing is ultimately based on the willingness and ability of individuals to engage with each other (Fernie *et al*., 2003). The sharing of knowledge depends on how individual employees perceive undertaking the tasks associated with knowledge (Bock *et al*. 2005, Hansen, 1999). A number of factors are known to encourage individuals to share their knowledge: social capital, enjoyment and reciprocity (Hau *et al*., 2013). If a group of people have come to trust each other after working together over a long period of time, the they are likely to collaborate in an effective way and freely share their knowledge (Chen *et al*., 2014).

5.2.11 To help integrate knowledge

With an overall mean value 3.17, to help integrate knowledge is other key driver for managing knowledge in the KSA public sector organisations. For an organisation to progress, it must be successful and it is knowledge that ultimately determines the success and growth of an organisation (Hosseini *et al*., 2014). In an organisational setting, successful KM requires people, processes and technologies to interact seamlessly. This requires suitable procedures to manage resources including knowledge. Technology provides the means to store data and also provide remote access to that data. Ultimately, success in KM requires employees to be willing to freely share their knowledge and this is only possible if there is a culture of trust throughout the organisation.

5.2.12 To reduce operating costs

With an overall mean value 3.16, to reduce operating costs is other key driver for managing knowledge in the KSA public sector organisations. It has been estimated that KM reduces the cost of global climate policy by approximately 90% in emerging markets and 20% in advanced economies, although the precise measure is determined by the substitutability between specific types of knowledge (Bretschger *et al*., 2017). By exploiting previously acquired knowledge from within the organisation, it is possible to shorten the duration of projects and anticipate possible problems before they occur. A competitive advantage can be realised by exploiting knowledge from within the organisation (employees) or from outside the organisation (customers or shareholders).

Knowledge is now recognised as one of the most important assets that an organisation can exploit. Therefore, facilitating the sharing of knowledge either internally or externally can realistically be expected to yield a sustainable competitive advantage (Liebowitz, 2000; Love

et al., 2005). KM is necessary for an organisation to develop a sustainable competitive advantage. It helps to prevent skills being duplicated and also to ensure that necessary and useful knowledge is shared across all employees so that it can be used as required.

5.3 SUMMARY

KM not only offers the potential to access valuable knowledge but in the process promises to boost productivity, increase effectiveness and prevent the existing pool of knowledge from leaving the organisation when employees retire or take up a position elsewhere. Organisations in all sectors of the Saudi economy must recognise the main drivers of KM initiatives. However, doing so is far from easy owing to the complexity of the matter.

It is critical for organisations across sectors to understand the key drivers before managing knowledge. Identifying and understanding the key drivers for managing knowledge associated is a complex process. This study revealed twelve key drivers for managing knowledge in KSA public sector organisations. They are: to reduce operating costs, top management commitment, to improve the organisation's effectiveness, to improve access to key knowledge, to identify knowledge assets, to improve the flow of knowledge, to improve the competitive advantage, to help integrate knowledge, to improve the capture and use of knowledge, to improve sharing of knowledge, to improve employees productivity and to protect loss of knowledge due to workers' departures.

Overall, the following inferences and implications could be drawn:

- A complex mix of political, economic, social and environmental forces drives KSA public sector organisations to manage knowledge. Therefore, understanding the drivers for implementing KM strategies is important. This understanding could assist decision makers to develop KM strategies based on the drivers.

- Most of the time organisations across sectors evaluate KM initiatives as "ineffective". This is because KM initiatives were implemented without fully understanding the drivers and the objectives that had to be met at the outset. Before embarking on a KM journey, decision makers have to understand what it is that they would like to achieve with KM and what value it needs to add to their organisation in the context of Saudi Vision 2030.

This chapter has addressed the first research objective of the current study, "to explore and document the key drivers for implementing knowledge management strategies in the KSA public sector organisations". Therefore, this chapter has answered the first research question which is "what are the key drivers that have fuelled the need for managing knowledge in the KSA public sector organisations?" The next chapter (i.e. Chapter 6) will discusses the key KM initiatives that have been implemented in the KSA public sector organisations.

CHAPTER 6: IMPLEMENTATION OF KM INITIATIVES IN THE KSA PUBLIC SECTOR ORGANISATIONS

6.1 INTRODUCTION

This study revealed six key KM initiatives that have been implemented in the KSA public sector organisations. They are: KM related policies, leadership for KM, incentives for KM, knowledge capture, knowledge sharing, training and mentoring. This chapter discusses the level of implementation of each of these key initiatives. The findings are also substantiated with relevant literature. Finally, section 6.3 summarises the key findings. In doing so, chapter 6 addresses part of the second research objective, which is "to investigate and document the key knowledge management strategies that are currently being implemented in the KSA public sector organisations." and second research question, which is "what are the key KM initiatives currently being implemented in the KSA public sector organisations" of this study.

6.2 IMPLEMENTATION OF KNOWLEDGE MANAGEMENT INITIATIVES IN THE KSA PUBLIC SECTOR ORGANISATIONS

Through the online survey, respondents were asked to indicate the key practices for KM initiatives in Saudi Arabia on a 4-point Likert scale: "Implemented and in use" (4), "Implemented but not in current use" (3), "Planned to be implemented in the next 5 years" (2) and "Do not have any plan for implementation" (1). It is evident from the Table 6.1 that the degree of implementation of KM initiatives is relatively low. Section 6.2.1 to 6.2.6 discusses each of the KM initiatives.

Table 6.1: The level of implementation of KM initiatives in the KSA public sector organisations

KM Practices		Implemented and in use
KM Policies:		
1	Organisation has a written KM policy	14%
2	Organisation has policies to improve worker retention	13%
3	Organisation uses partnerships to acquire knowledge	19%
4	Organisation uses strategic alliances to acquire knowledge	11%
Leadership for KM:		
1	KM practices are the responsibility of managers	20%
2	KM practices are the responsibility of the knowledge officer	16%
3	KM practices are explicit criteria for assessing employee performance	22%
4	KM practices are the responsibility of non-management employees	14%
Incentives for KM:		
1	Knowledge sharing is rewarded with monetary incentives	8%
2	Knowledge sharing is rewarded with non-monetary incentives	13%
Knowledge Capture:		
1	The organisation regularly captures and uses knowledge obtained from other sources such as associations, clients and suppliers	17%
2	The organisation regularly captures and uses knowledge obtained from public research institutions including universities and government laboratories	12%
3	The organisation regularly dedicates resources to identify and obtain external knowledge	19%
4	The organisation encourages workers to participate in project teams with external experts	12%
Training and Mentoring:		
1	The organisation provides formal training related to KM practices	24%
2	The organisation uses formal mentoring practices to share knowledge	21%
3	The organisation encourages experienced workers to transfer their knowledge to new or less experienced employees	24%
4	The organisation encourages employees to continue their education by reimbursing tuition fees for successfully completed work-related courses	25%
5	The organisation offers off-site training to workers in order to keep their skills current	22%
Knowledge Sharing:		
1	The organisation regularly updates databases of good work practices and lessons learned	17%
2	The organisation regularly updates written documentation such as lessons learned, training manuals, good work practices, articles for publication etc. (organisational memory)	22%
3	The organisation encourages employees to share knowledge in collaborative ways between project teams that are physically separated	23%

6.2.1 Knowledge management related policies

It is evident from the Table 6.1 that a written KM related policies is less implemented in the KSA public sector organisations. The above result clearly suggests that the degree of implementation of KM policies is relatively low. Organisational knowledge is captured explicitly in many ways in organisations; in policies and procedures, practice, structures and even organisational assets. These elements are often referred to as artefacts (Schein 2010) and are viewed as the carriers of past experience and learning as well as an embodiment of the organisation's culture. Martin de Holan (2011) believes that assets (for example, physical assets such as buildings) are at the core of an organisation and are often tangible representations of the resources upon which the organisation draws to produce a return. These assets frequently remain stable over time and reflect a key way that such organisations embed knowledge.

In this study, 19% of respondents indicated that their organisations have implemented and in use partnerships to acquire knowledge. According to Brito *et al*. (2017), the process of acquiring knowledge can originate from internal interaction such as social interaction, encouraging collaboration, and external interaction such as creating partnerships. Galvão *et al*. (2017) asserted that the development of science-based technologies has made it easier for organisations to create research and development partnerships to answer market needs. Partnerships between organisations help open innovation through knowledge co-creation (Su *et al*. 2015).

Moreover, 14% of respondents noted that their organisation has a written KM policy the implemented and use. Alsulaimi (2016) stated that the application of KM in public

organisations has become a modern concept and it must be in administrative work as well as the formulation of strategic plans on the light of knowledge maps. Thus, organisations should have a written KM policy. Of the respondents, 13% noted that their organisation have policies to improve worker retention. Jackson *et al*. (2014) stated that organisations should have policies to develop employee retention by adopting practices to prevent workers from leaving the organisation. Argote *et al*. (2003) and Haider *et al*. (2015) stated that training, development programmes and active culture all help to benefit employee retention by improving employees' skills and abilities to acquire knowledge.

On the other hand, 11% of respondents noted that their organisation uses strategic alliances to acquire knowledge. Abualqumboz (2017) stated that knowledge is an asset for the organisation's strategy of competitiveness and alliances. When knowledge as an asset becomes accessible and flexible, organisations will form alliances because they will not risk any loss of knowledge (Harrigan, 1985). Liebowitz (2008) refers to knowledge retention as strategies that organisations implement to prevent knowledge from leaving the organisation. Grant (1996) stated that knowledge dominates the business environment and is an organisation's most valuable competitive advantage and asset.

The KM policy and strategy for the public sector needs to be carefully planned out in order to succeed and deliver on promises. In addition, consideration should be given to creating a generic KM framework for the public sector by understanding and reviewing the multiple types of frameworks present in the private sector (Cong and Pandya 2003).

6.2.2 Leadership for KM

Organisation leadership form the foundation for successful KM implementation (Kim *et al*. 2003). Ichijo and Nonaka's (2006) emphasises the role of leadership in building and managing knowledge in organisations. By reviewing the literature to provide a framework for assessing KM and KM success factors, Jennex and Olfman (2005) noted that leadership is one of the most important critical success factors. It is evident from the Table 6.1 that degree of implementation of leadership for KM is relatively low. In this study, 22% of the respondents noted that KM practices were explicit criteria for assessing employee performance. The leadership of the organisation actively promotes continuous improvement programmes because continuous improvement requires an obligation to learn and overcome problems (Duryan and Smyth, 2017). Organisations use processes such as the selection, training, assessing and development of human resources that can achieve a competitive advantage through human capital because they are able to identify workers with the best skills and attitudes (Ruíz et al., 2017). These abilities enable workers to reflect on their performance to identify and support actions that lead to better performance (Cegarra and Rodrigo, 2015). Cepeda et al. (2015) stated that to increase financial performance, knowledge is crucial and workers must remain up to date in this regard.

Of the respondents 20% noted that KM practices were the responsibilities of managers. According to Birasnav (2014), organisational knowledge is established at an individual level. Thus, as workers learn and share knowledge with other workers, effective human capital is created and organisational learning takes place. If workers feel motivated in their job and change their attitudes and behaviours, they are likely to contribute to deliver improved internal performance (increased productivity and quality) and to achieve improved financial

performance (Boselie et al., 2005). Therefore, managers must support new and renewed knowledge by encouraging workers to increase business performance and to improve competitive advantages.

In this study, 16% of respondents noted that KM practices were the responsibility of the knowledge officer. According to Harlow (2017), knowledge officers are at the vanguard of ensuring that technological development strategy doesn't miss the business causes for knowledge use. There is a need for a KM strategy that includes data analytics to ensure that the organisation doesn't drift from its overall strategies or allow data to run the business without aim and cause. A new rationale for using and developing KM professionals is now apparent with the large increase in the knowledge of organisations and must be pursued to avoid marginalising KM (Harlow, 2017).

On the other hand, 14% of respondents noted that KM practices were the responsibility of non-management employees. Paolo Canonico et al. (2017) stated that non-management employees within an organisation can diffuse knowledge by exchanging opinions and the practice of communication. Thus, knowledge sharing is achieved. Removing separations between departments enhances communication and encourages informal knowledge and experience.

6.2.3 Incentives for KM

It is evident from the Table 6.1 that incentives for KM are less implemented in the KSA public sector organisations. In this study, 13% of respondents noted that knowledge sharing

was rewarded with non-monetary incentives. According to Gope et al. (2017), the incentives system is based on an employee's performance level which then contributes to defining the organisational performance of the organisation. Organisations introduce monetary and non-monetary incentives for their workers that strive for success through learning, obligation, knowledge acquisition and knowledge sharing. As for non-monetary flexible incentives, it offers incentives such as medical insurance, interest-free loans for house purchases, loans for weddings, and serious illness or death allowances for close family members (Gope et al., 2017).

In this study, only 8% of respondents noted that knowledge sharing was rewarded with monetary incentives. Jia et al. (2017) indicated that monetary incentives increase workers' enthusiasm for sharing but in the long-term these methods do not have durability because they are limited to temporary obedience. Monetary incentives are financial incentives used by employers to motivate workers to meeting their aims. They offer incentives such as bonuses, pay rises and profit sharing.

6.2.4 Knowledge Capture

It is evident from the Table 6.1 that capturing knowledge related strategies are less implemented in the KSA public sector organisations. Of the respondents, 19% noted that their organisation regularly dedicates resources to identify and obtain external knowledge. Jia et al. (2017) stated that the effort made by organisations to improve workers' performance by acquiring external knowledge can transfer internal knowledge, develop present knowledge and eliminate outmoded knowledge.

Moreover, 17% of respondents noted that organisations regularly capture and use knowledge obtained from other sources such as associations, clients and suppliers whereas 12% of respondents noted that their organisation regularly captures and uses knowledge obtained from public research institutions including universities and government laboratories. Brito et al. (2017) indicated that higher education institutions have been subject to change in recent years regarding their management to achieve better organisational performance by the application of KM.

In this study, 12% of respondents noted that their organisation encourages workers to participate in project teams with external experts. Demigha (2017) indicated that KM requires organisational members to communicate even though they work in several areas and have many requirements and opinions. It would be suitable to support workers to participate in project teams with experts to acquire the experience of the experts for shared utilisation.

6.2.5 Training and Mentoring

It is evident from the Table 6.1 that training and mentoring strategies are less implemented in the KSA public sector organisations. Of the respondents, 25% noted that their organisation encourages employees to continue their education by reimbursing tuition fees for successfully completed work-related courses. According to Vito *et al*. (2018), attractive incentives help to develop the kind of motivational environment that encourages employees to continue their education by reimbursing tuition fees or tuition waivers. Whereas 24% of respondents noted that their organisation provides formal training related to KM practices. Organisations should

determine the type of knowledge that needs to be expanded. Thus, this can be coordinated by formal training courses using external consultants or new members of staff (Balagué, 2017). The University of Eastern Finland Library has started to apply a programme of training for workers that focuses on new KM tools. It was important that all workers should be supported to participate in KM practices (Balagué, 2017).

In this study, 24% of respondents noted that their organisation encourages experienced workers to transfer their knowledge to new or less experienced employees. Balagué (2017) indicated that training includes both formal and informal activities and learning activities should be available to workers to help them face the challenges. Organisational learning depends on the desire to transfer their personal experience to new or less experienced employees so that it can benefit the entire organisation.

Of the respondents, 22% noted that their organisation offers off-site training to workers in order to keep their skills current. According to Balagué (2017), there are positive tools to motivate attendance at training schemes such as off-site training for workers and motivations to ensure active participation in these events to keep skills current. The training seeks to ensure that the team that will be involved in a new project can gain adequate knowledge and skills to resolve the problems that may arise. The intention is to instil confidence that they can continue and produce new knowledge.

Also, 21% of respondents noted that their organisation uses formal mentoring practices to share knowledge. Balagué (2017) indicated that Universitat Autònoma de Barcelona Library has organised an annual workshop titled “Sharing Knowledge at UAB Libraries” to exchange

information, share knowledge, apply best practices and find solutions to current problems in libraries. Therefore, formal mentoring helps to share knowledge at a time when knowledge is the main element in the innovation and development of the service.

6.2.6 Knowledge Sharing

It is evident from the Table 6.1 that knowledge sharing strategies are less implemented in the KSA public sector organisations. In this study, 23% of respondents noted that their organisation encourages employees to share knowledge in collaborative work among project teams that are physically separated. Organisations provide a formal structure for collaborative knowledge sharing. Cross and Parker (2004) noted that formal structures and prescribed communication channels fail to develop effective knowledge collaboration among employees. Meanwhile, Leal *et al*. (2017) indicated that knowledge-related competence and organisational performance can be promoted by knowledge sharing in collaborative work by project teams because it develops processes by exchanging of information, best practices, insights, experiences, preferences and lessons learned.

Whereas 22% of respondents noted that their organisation regularly updates written documentation such as lessons learned, training manuals, good work practices, articles for publication etc. (organisational memory). Batista and Quandt (2017) stated that organisational processes are one of the KM practices that support the creation, retention, establishment and distribution of organisational knowledge. Organisational processes include the identification of best practices, organisational memory/lessons learned, competitive intelligence systems, knowledge mapping, intellectual capital or intangible asset management, idea capture and learned lessons, and taxonomy.

Of the respondents 17% noted that their organisation regularly updates databases of good work practices and lessons learned. Data is one of the key sources of knowledge sharing and an important factor for the existence of knowledge (Canals and López-Borrull 2017). Now data can be accessed from different sources at high speed and relatively easily. Therefore, organisations depend on machine learning algorithms applied to large databases to gain a better understanding of their customers, their competitors or their environment. Also, organisations regularly update databases of good work practices and lessons learned (Canals and López-Borrull, 2017).

6.3 SUMMARY

This chapter discussed six key knowledge management related strategies that have been implemented in the KSA public sector organisations. They are: KM related policies, leadership for KM, incentives for KM, knowledge capture, knowledge sharing, training and mentoring. The extent of implementation of KM initiatives is relatively very low in the KSA public sector organisations. The study findings have provided valuable insight into the function that KM plays in Saudi public sector organisations. Knowledge is a resource that organisations have to actively manage in order to realise the full benefits. There are various ways in which this can be achieved but all will require obstacles to be overcome. For instance, the organisation held within an organisation is diverse and complex. In addition, some of that knowledge will be explicit, whereas other elements will be tacit. Therefore, in order to realise the full potential, organisations should adopt a formal KM policy and implement policies to help retain employees. The current research has also established that effective leadership is required if Saudi public sector organisations are to realise the full benefits of KM.

The importance of appropriate incentives has also been established. Incentives provide the motivation for individuals to share and apply their knowledge. Furthermore, organisations that fully embrace training not only help their employees to acquire relevant skills but also increase their capacity to learn. Training prepares employees to generate new understandings and develop new ideas that will ultimately benefit the organisation. The practical nature of the training means that the knowledge acquired can be implemented in their daily routines but the benefits extend to improvements in organisational learning, product innovation, administrative innovation and process innovation.

The willingness and ability of employees to share knowledge plays a central role in determining whether an organisation will achieve a sustainable competitive advantage. Therefore, an appreciation of the knowledge sharing dynamics helps to recognise the personnel management processes that will actively promote the sharing of knowledge within organisations. Applying knowledge capture in an appropriate manner will help to avoid costly errors and result in customers experiencing improved service levels. Knowledge capture helps to ensure that new ideas are absorbed and diffused in a timely manner, improves operational efficiency and benefits organisational agility. As such, it helps the entire organisation to grow and progress.

However, the implementation of knowledge capture is reliant on the vision and ability of the owners. Within the setting of a public sector organisation, implementation is also governed by the prevailing culture, the calibre of the employees, and the technology and finance that are available. In order to fully exploit the tacit and explicit knowledge contained within an organisation, it is necessary to adopt a coherent, structured approach. Furthermore, it is important to recognise that capturing knowledge can be especially challenging in a public

sector organisation because the process is complex and requires integration. Capturing knowledge is not a one-time investment. Rather, it is an investment that is future-oriented and requires sustained involvement and attention over a prolonged period of time. These issues are evident from the computer-based knowledge capture awareness tool and this insight enables organisations to make suitable plans to ensure they become fully engaged in knowledge capture. However, it is apparent that more needs to be done in future to improve education and training programmes so that they better reflect the complex and technical nature of knowledge capture.

Overall, the following inferences and implications can be drawn:

- The scarcity of knowledge and expertise a huge challenge for many KSA public sector organisations. Therefore, training and education related to the management of knowledge will help leaders, managers, and change agents to better understand on how to craft and implement various KM strategies for competitive advantage.

- The implementation of initiatives related to KM is relatively low in the KSA public sector organisations. Therefore, there is a need to reshape the KSA public sector organisations existing KM strategy in order to gain sustainable competitive advantage.

This chapter has addressed second research objective, which is "to investigate and document the key knowledge management strategies that are currently being implemented in the KSA public sector organisations." and second research question, which is "what are the key KM initiatives currently being implemented in the KSA public sector organisations" of this study.

The next chapter (i.e. Chapter 7) will discusses the usage and effectiveness of knowledge management techniques and technologies for dealing with sustainability initiatives.

CHAPTER 7: TECHNIQUES AND TECHNOLOGIES FOR MANAGING KNOWLEDGE IN THE KSA PUBLIC SECTOR ORGANISATIONS

7.1 INTRODUCTION

This chapter discusses the usage and effectiveness of knowledge management (KM) techniques and technologies in the KSA public sector organisations. In this chapter results are presented in two parts. The first part in section 7.2 presents an analysis of quantitative data in relation to the usage of KM techniques and technologies. In this study, twenty-seven (27) key KM techniques and technologies were most widely used in the KSA public sector organisations. The findings are also substantiated with relevant literature. In doing so, section 7.2 addresses the third research question of the current study, which is "what are the key KM techniques and technologies that are used in the KSA public sector organisations".

The second part in section 7.3 presents analysis of quantitative data in relation to the effectiveness of twenty-seven (27) key KM techniques and technologies that are currently being used in KSA public sector organisations. The findings are also substantiated with relevant literature. In doing so, section 7.3 addresses the fourth research question of this study, which is "how effective are the key KM techniques and technologies that are used in the KSA public sector organisations". Section 7.4 summaries the results. In doing so, this chapter addresses the third research objective of this study, which is "to explore and document the usage and effectiveness of key KM techniques and technologies"; and research questions third and fourth of this study.

7.2 USAGE OF KM TECHNIQUES AND TECHNOLOGIES WITHIN THE KSA PUBLIC SECTOR ORGANISATIONS

Through the online survey, respondents were asked to indicate the usage of KM techniques and technologies on a 4-point Likert item: 4= Always used, 3= Often used, 2= Sometimes used and 1= Never used. It is apparent from Table 7.1 that the five most widely used KM techniques and technologies are: telephone (3.32), internet (3.12), face-to-face meetings (2.86), WhatsApp (2.84), and formal education and training (2.81). Whereas, the five least used KM techniques and technologies are: Viber (1.71), FaceTime (1.84), LinkedIn (1.91), Informal networks (2.01), and knowledge maps (2.06).

The t-test for equality of means was carried out to investigate if there were any significant differences between 'directors' and 'managers' insights on the usage of KM techniques and technologies (at the 0.05 significance level) (refer Table 7.1). According to Black et al. (2010), in the t-test, a significant value (ρ) below 0.05 indicates a high degree of difference of opinion between groups on that variable (in this case, between 'directors' and 'managers'). Results here show that all KM techniques and technologies, apart from internet, are not significant (>0.05), and therefore, there are no significant statistical variations between the responses of the 'directors' and 'managers'. In this study, managers (with a mean value of 3.37) perceive that internet is being more widely used for managing knowledge than directors (with a mean value of 2.95). Sultan (2013) noted that internet is regarded as one of the most efficient tool and technology that has been helping organisations in KM. Alshahrani (2016) stated that internet users in Saudi Arabia at the end of 2013 approximately 16.5 million internet users, representing 55.1 % of the country's total population. Alebaikan and Troudi (2010) noted that it is estimated that internet use will continue growing rapidly in Saudi

Arabia, which raises an issue of providing new learning strategies that include use of technology.

Table 7.1: Usage of KM techniques and technologies within the KSA public sector organisations

Sl. No	KM techniques and technologies	Overall usage	Rank	Directors	Managers	t_{cal}	Significant value (ρ)
1.	Brainstorming	2.28	17	2.31	2.23	0.455	0.650
2.	Bulletin Boards	2.67	9	2.73	2.58	0.884	0.379
3.	Coaching and Mentoring	2.62	10	2.58	2.67	-0.611	0.542
4.	Communities of Practice	2.36	14	2.34	2.37	-0.178	0.859
5.	Cross-Functional Collaboration	2.76	7	2.73	2.79	-0.337	0.737
6.	Face-to-Face Meetings	2.86	3	2.84	2.88	-0.231	0.818
7.	Formal Education and Training	2.81	5	2.80	2.84	-0.240	0.811
8.	Formal on-the-job Training	2.71	8	2.78	2.60	1.031	0.305
9.	Help Desks	2.33	16	2.27	2.42	-0.918	0.361
10.	Informal Networks within the Department	2.01	24	1.92	2.14	-1.236	0.219
11.	Interaction with Client/Supplier/Customer	2.57	11	2.59	2.53	0.330	0.742
12.	Internet	3.12	2	2.95	3.37	-2.336	0.021*
13.	Job Rotation	2.45	12	2.48	2.40	0.516	0.607
14.	Knowledge Maps	2.06	23	2.03	2.09	-0.351	0.726
15.	Project Summaries	2.24	19	2.13	2.42	-1.595	0.114
16.	Story Telling	2.25	18	2.13	2.44	-1.493	0.138
17.	Telephone	3.32	1	3.22	3.47	-1.513	0.133
18.	Video Conferencing	2.20	21	2.05	2.42	-1.900	0.600
19.	Work Manuals	2.34	15	2.27	2.44	-1.005	0.317
20.	Viber	1.71	27	1.64	1.81	-0.976	0.332
21.	WhatsApp	2.84	4	2.81	2.88	-0.322	0.748
22.	Instagram	2.21	20	2.11	2.35	-1.067	0.288
23.	Facebook	2.06	22	1.91	2.28	-1.830	0.070
24.	Twitter	2.80	6	2.77	2.86	-0.460	0.646
25.	FaceTime	1.84	26	1.73	2.00	-1.338	0.184
26.	Snapchat	2.36	13	2.20	2.58	-1.541	0.126
27.	LinkedIn	1.91	25	1.81	2.05	-1.231	0.221

7.2.1 The most widely used KM techniques and technologies

It is apparent from the Table 7.1 is that telephone, face-to-face meetings, and formal education and training are top five most widely used KM techniques and technologies. This suggests that conventional techniques for acquiring, developing, sharing and storing knowledge are still used frequently among KSA public sector organisations. For instance, in this study, overall mean value of 3.32, telephone is the most widely used KM techniques for managing knowledge in KSA public sector organisations. The telephone is a simple and familiar tool for communicating and sharing knowledge. In addition, telephone remains important for KM because it could be used to capture and distribute structured knowledge but also enable people to share tacit knowledge. According to Ragab and Arisha (2013) telephones are often considered as a source for knowledge within organisations as through this the exchange of knowledge becomes even more convenient for employees. Furthermore, Dey (2013) noted that the use of a telephone can help to communicate ideas and knowledge with another person at distant place. Therefore, it is evident that the usage of 'telephone' to capture/share knowledge significantly foster externalisation, because the tacit knowledge of experts is articulated and often transferred into written documents by the formulation of the captured knowledge pieces. By the utilisation of expert telephone interviews, recording and reporting the knowledge which was newly developed by the expert in his/her job will be beneficial for creating further new knowledge by other members of the organisation.

In this study, overall mean value of 3.12, internet is the second most widely used KM techniques and technologies within the KSA public sector organisations. In today's knowledge era, the internet and intranet are great ways of allowing individuals to access to wide variety of information and knowledge. Both channels allows employees to acquaint themselves with different areas of knowledge and, by using newsgroups and interaction tools,

to access this knowledge first hand without excessive filtering or bias (Kluge *et al*., 2001). For instance, one of the respondents noted that:

> *"Most often we use internet to capture knowledge related to process or public sector management issues from research institutes or from famous business schools. One of the key advantages of using internet is the speed of capturing and utilisation of information and knowledge in our day-to-day business".*

The above statement clearly suggests that the internet is widely used with in KSA public sector organisations to capture external knowledge. The availability of new technologies, particularly the internet, has been instrumental in catalysing the KM movement. The internet is a great way of allowing individuals to access a wide variety of new knowledge quickly and allows employees to capture themselves with different knowledge by using comprehensive knowledge base, newsgroups and interactive tools, and of immediate value to the employees. Teo and Choo (2001) suggested that using the internet can have a positive impact on competitive intelligence information. Furthermore, they suggested that the quality of competitive intelligence drives organisation performance. Strategies that integrate the internet and traditional competitive advantages are very effective (Porter, 1996). Thus, the strategic use of the internet leads to competitive advantage, because production and procurement can be more effective.

With an overall mean value of 2.86, 'Face-to-Face Meetings' is the third most widely used KM techniques and technologies in the KSA public sector organisations, supporting the notion that social interaction is a pre-requisite for successful KM (Davenport and Prusak, 1998).According to Nonaka and Takeuchi (1995), personal contact enhances the tacit-to-tacit knowledge exchange. Koskinen et al. (2003) view face-to-face interaction as the richest

medium to transfer knowledge, as it allows immediate feedback so that understanding can be checked and interpretation corrected. 'Face-to-Face Meetings' happens when individuals physically close to each other engage in a mutual exchange of verbal information. Like other communication mechanisms, it allows the exchange of employees' knowledge throughout the organisation. However, exchanging knowledge by means of 'Face-to-Face Meetings' is expected to be more effective compared to other means of knowledge sharing. Interactive networks based on the internet or phone system, for example, are not characterised by employees' physical proximity. Durst and Edvardsson (2012) note that 'Face-to-Face Meetings' is considered as a tool that would contribute in KM within organisation. Al Saifi *et al.* (2016) noted that face-to-face meeting facilitate knowledge sharing in diverse ways including how to use of multiple communication styles, brainstorming and problem-solving, training, consultations and employee rotation. In conclusion, 'face-to-face meetings' based on employees' physical contact and dialogue are likely to result in the diffusion of tacit knowledge throughout the organisation. Therefore, employees enjoy a substantial competitive advantage, in the form of higher productivity, compared to workplaces where this means of knowledge sharing is absent.

In this study, 'WhatsApp' (with a mean value of 2.84) is the fourth most widely used KM techniques and technologies. WhatsApp is considered as a source for sharing knowledge within social media and it is an instant messaging application for smartphones. It allows users to exchange images, videos, and audio or written messages using their Internet connection. Therefore, it is positioned itself as a superior alternative to SMS messaging, which can be very expensive when used in foreign countries due to roaming charges. Wankel (2016) noted that WhatsApp has been widely adopted globally now and has been appreciated within organisations as well through which the knowledge has been efficiently shared internally

within the organisation. Furthermore, in the KSA public sector organisations especially younger generation staff preferred to use WhatsApp to capture and share the critical knowledge. However, in the KSA recently WhatsApp has been partially blocked and put restrictions for voice calls.

Formal Education and Training (with a mean value of 2.81) is the fifth most widely used KM techniques and technologies in this study. The creation of knowledge is essential for the survival of any organisation. Hislop (2013) says that the ability to create knowledge and generate a competitive advantage is now essential for any organisation that wishes to remain sustainable within its marketplace. Knowledge creation is an activity that occurs throughout daily activities, at work or in social setting. Knowledge creation occurs in many dynamic forms, which could be through humanistic means such as formal training and education or talking with people who share similar interests. The creation and development of knowledge is an important and intrinsic feature of KM (Dul, *et al*., 2011). Vacik *et al.*, (2013) noted that formal education and training programmes creates and spreads the new information/knowledge require for organisations. Wilson (2014) stressed that continuous professional development mainly training and education is thought to be vital to expert and knowledge workers. In summary, formal education and training helps to create new knowledge. Technology can facilitate knowledge creation but cannot replace people. Organisations leverage on their ability to create knowledge, innovate, and generate value with new knowledge. This is knowledge that leads to new and innovative products; knowledge that improves internal processes and operations; or knowledge to improve the strategic decision-making capabilities and direction of the organisation.

7.2.2 The least used KM techniques and technologies

In this study, Viber (with a mean value of 1.71), FaceTime (with a mean value of 1.84) and LinkdIn (1.91), are least used KM techniques and technologies in the KSA public sector organisations. Barhoumi (2015) noted that Viber is one of the cheap and effective sources through which the knowledge sharing could happen, but still there are various factors that have been limiting its application like its declining quality and increasing competitive applications within market. FaceTime has been used within organisations for voice calls, conducting meetings and teleconferencing but the application is restricted to limited devices and operating systems which would limit its adoption (Wankel, 2016). Furthermore, the low usage of Viber and FaceTime could be due to the Saudi communications commission withheld some of the Viber and FaceTime services and application and lack of awareness of Viber and FaceTime usage and benefits within the KSA.

The Internet makes it possible for individuals to connect, collaborate and share knowledge, information, document, photo, video, etc. continuously with anyone in the world. Furthermore, people are able to make use of social media tools such as LinkedIn in order to increase range and richness of their networks, gather information/knowledge and nowadays, increasingly organisations are finding ways of integrating social media into their business processes (Gaal *et al*, 2014).Social networks has been contributing to the development and strengthening of organisations by means of collaborative work between people. Hence it helps to extract the tacit knowledge from external sources. Surowiecki (2005) defined that social media is to make use of the "wisdom of the crowd". Group of people are better at problem solving, fostering decision making than the individuals alone. New ways of inspiring and exploiting knowledge sharing are forcing organisations to expand their knowledge sharing technologies and practices (Mentzas *et al.*, 2007). However, the usage of social

network technologies such as LinkedIn is used less for managing knowledge in the KSA public sector organisations.

Informal networks within the department (with a mean value of 2.01) is the another least used KM techniques and technologies in this study. Knowledge which by nature is tacit is stored in the minds of individuals (Haldin-Herrgard, 2000). The need for knowledge to resolve complex problem situations requires organisational members to collaborate and share knowledge within and across organisational boundaries. Lundvall (2010) indicated that informal networks of employees are efficient channels to share information and technical know-how. Jenab and Sarfaraz (2012) also highlighted the informal networks as a technique that is adopted by the organisations, through which knowledge is managed effectively within organisations. However, organisations provide a formal structure for collaborative knowledge sharing. Cross and Parker (2004) noted that formal structures and prescribed communication channels fail to develop effective knowledge collaboration among employees. Therefore, the KSA public sector organisations decision makers need to be aware of the strengths of the informal networks mechanism to capture and share internal and external sources of knowledge that can be utilised to resolve complex problems.

In this study, knowledge maps (with a mean value of 2.06) are another least used KM techniques and technologies in the KSA public sector organisations. Davenport and Prusak (1998) note that developing a knowledge map involves locating important knowledge within the organisation and then publishing some sort of list or picture that shows where to find it. One of the main purposes of knowledge maps is to locate important knowledge in an organisation and show users where to find it (Kim *et al.*, 2003). Effective knowledge maps should point not only to people but to documents and databases as well. Knowledge maps

should also locate actionable information, identify domain experts, and facilitate organisation-wide learning (Eppler, 2003). They should also trace the acquisition and loss of knowledge, as well as map knowledge flows throughout the organisation (Grey, 1999).

In summary, the level of usage of knowledge maps is relatively low in the KSA public sector organisations. This could be due to the fact that mapping of knowledge is in its infancy compared to capturing and sharing knowledge. Therefore, there is an urgent need for developing and deploying sector-wide knowledge mapping awareness programmes. Knowledge maps are powerful tools to inventory an organisation's critical knowledge and pinpoint areas that may be at risk. In many cases, the simple act of creating a knowledge map reveals weak links and bottlenecks in the flow of knowledge. By articulating exactly how knowledge moves through the organisation, teams can identify improvement opportunities and make targeted adjustments to ensure that the right knowledge reaches the right people at the right point in the process. Therefore, knowledge maps can quickly connect experts with each other or help novices identify experts promptly. As a consequence, knowledge maps can speed up the knowledge seeking process and facilitate systematic knowledge development since they connect insights with tasks and problems.

In this chapter, section 7.3 has discussed key KM techniques and technologies that are used in the KSA public sector organisations. Organisations should note that KM techniques and technologies roles are not mutually exclusive and organisations may adopt any combination of them to tackle their particular problems or support particular motives. For instance, if the prime reason for KM is minimising the risk of losing valuable knowledge, the response may involve identifying and capturing knowledge that an organisation has. Section 7.2 has addressed the third research question of this study.

7.3 EFFECTIVENESS OF KM TECHNIQUES AND TECHNOLOGIES WITHIN THE KSA PUBLIC SECTOR ORGANISATIONS

Through the online survey, respondents were asked to indicate the effectiveness of KM techniques and technologies on a 4-point Likert item: 4= Highly Effective, 3= Has Some Effect, 2= Has Little Effect and 1= Has No Effect.

Table 7.2: Effectiveness of KM techniques and technologies within the KSA public sector organisations

No.	KM techniques and technologies	Overall effectiveness	Rank	Directors	Managers	t_{cal}	Significant value (ρ)
1.	Brainstorming	3.10	9	2.97	3.30	-1.926	0.057
2.	Bulletin Boards	3.07	11	2.97	3.23	-1.556	0.123
3.	Coaching and Mentoring	3.12	8	2.98	3.33	-2.002	0.048*
4.	Communities of Practice	3.01	13	2.89	3.19	-1.730	0.087
5.	Cross-Functional Collaboration	3.25	4	3.08	3.51	-2.630	0.010*
6.	Face-to-Face Meetings	3.17	5	3.13	3.23	-0.656	0.513
7.	Formal Education and Training	3.26	3	3.20	3.35	-0.868	0.387
8.	Formal on-the-job Training	3.17	7	3.06	3.33	-1.432	0.155
9.	Help Desks	2.72	21	2.53	3.00	-2.725	0.008*
10.	Informal Networks within the Department	2.53	23	2.47	2.63	-0.962	0.338
11.	Interaction with citizens	3.07	12	2.91	3.30	-2.188	0.031*
12.	Internet	3.28	2	3.22	3.37	-0.897	0.372
13.	Job Rotation	3.09	10	3.00	3.23	-1.306	0.195
14.	Knowledge Maps	2.88	16	2.80	3.00	-1.110	0.269
15.	Project Summaries	2.87	17	2.84	2.91	-0.367	0.714
16.	Story Telling	2.77	18	2.69	2.88	-1.062	0.291
17.	Telephone	3.17	6	3.13	3.23	-0.607	0.545
18.	Video Conferencing	2.77	19	2.75	2.79	-0.224	0.823
19.	Work Manuals	2.90	15	2.88	2.93	-0.279	0.781
20.	Viber	2.15	27	2.06	2.28	-1.112	0.269
21.	WhatsApp	2.95	14	2.94	2.98	-0.199	0.842
22.	Instagram	2.60	22	2.48	2.77	-1.345	0.182
23.	Facebook	2.48	24	2.45	2.51	-0.289	0.773
24.	Twitter	3.33	1	2.95	3.88	-1.552	0.124
25.	FaceTime	2.25	26	2.22	2.30	-0.400	0.690
26.	Snapchat	2.76	20	2.64	2.93	-1.354	0.179
27.	LinkedIn	2.38	25	2.38	2.40	-0.097	0.923

It is apparent from Table 7.2 that the five most effective KM techniques and technologies are: Twitter (3.33), Internet (3.28), Formal Education and Training (3.26), Cross-Functional

Teamwork (3.25), and Face-to-Face Meetings (3.17). Whereas, the five least effective KM techniques and technologies are: Viber (2.15), FaceTime (2.25), LinkedIn (2.38), Facebook (2.48), and Informal Networks within the Department (2.53).

The t-test for equality of means was carried out to investigate if there were any significant differences between 'directors' and 'managers' insights on the effectiveness of KM techniques and technologies (at the 0.05 significance level) (refer Table 7.2). Results here show that all KM techniques and technologies, apart from coaching and mentoring, cross-functional collaboration, help desks and interaction with citizens are not significant (>0.05), and therefore, there are no significant statistical variations between the responses of the 'directors' and 'managers'.

It is apparent from the Table 7.2 is that Twitter, internet, formal education and training, cross-functional collaboration, and face-to-face meetings are top five most highly effective KM techniques and technologies. Again, this suggests that conventional techniques are most effective for acquiring, developing, sharing and storing knowledge apart from Twitter. For instance, in this study, overall mean value of 3.33, twitter is the most highly effective KM techniques for managing knowledge in KSA public sector organisations. The twitter is a simple and familiar tool for communicating and sharing knowledge. In addition, twitter remains important for KM because it could be used to capture and distribute structured knowledge but also enable people to share tacit knowledge.

Over the last few years, large scale analysis of data has certainly become one of the most important priorities related to research and business. Social media, Twitter in particular, has played a very important role in this regard as they have data that is large in terms of variety,

velocity and volume. To extract considerably productive information and trends related to such data will certainly help towards better decision making and understanding of users. For English content, multiple analysis techniques have been used. However, the least analysed language has been Arabic. With regards to the Arabic content, the volume has massively increased after social network evolution. With regards to Twitter, more than 6.5 million Arabic users produce more than 10.8 million tweets on a daily basis (Alhumoud *et al*., 2015). Therefore, it is evident that the usage of 'twitter' to capture/share knowledge significantly foster externalisation, because the tacit knowledge of experts is articulated and often transferred into written documents by the formulation of the captured knowledge pieces. By the utilisation of expert telephone interviews, recording and reporting the knowledge which was newly developed by the expert in his/her job will be beneficial for creating further new knowledge by other members of the organisation.

In the current study, one of the respondents noted that:

> *"Sharing successes and failures, constant meetings and discussions with employees and stakeholders are often critical to the success of our change initiatives. To help employees and stakeholders to understand and embrace change initiatives, explicit plans must be developed early on to inform employees and stakeholders about the purpose, vision and strategies, how the organisation will change, and how the changes will affect them. Therefore, we used bulletin boards and newsletters as a channel to highlight success stories. We have both electronic and paper based bulletin boards and newsletters that go out to the whole organisation, or to specific targeted audiences, like the public relation office, or suppliers. This initiative has improved our reputation in the local community".*

The above statement reveals that, a bulletin board is very effective technique for sharing knowledge with employees and key stakeholders. Bulletin boards and newsletters allow companies to stay in front of their employees and key stakeholders including customers on a consistent basis. Many print and online newsletters offer a faster delivery of information and knowledge, decreases response time, and saves the organisation resources (Dalkir, 2013). In order to take advantage of this powerful channel, using the simple and right contents is vital.

In this study, 'cross-functional teamwork' (with a mean value of 3.25) is the fourth most highly effective KM techniques and technologies. Cross-functional teamwork is considered as a source for sharing knowledge within functions. Cross-functional teamwork means people group who apply different skills, with a high degree of interdependence, to ensure the effective delivery of a public organisational aim (Gelderman *et al*., 2017). According to Nguyen *et al*., (2018) indicated that Cross-functional teamwork is the most dramatic trends in organisational design. Cross-functional teamwork around key value-adding processes is a common organisational response to these pressures. Effective cross-functional teamwork generates both hard and soft outcomes, which have an impact upon each other and also synergistic- ally back onto teamwork effectiveness. Thus, success breeds success. This model is offered as a practical tool for people designing, leading and facilitating cross-functional new product development teams.

In this study, Facebook (with a mean value of 2.48) are another least effective KM techniques and technologies in the KSA public sector organisations. Academic researches refers to Facebook has focused on identity presentation and privacy concerns (Stutzman, 2006). Gross and Acquisti (2005) stated that there are a lot of information Facebook participants provide about themselves, the open nature of the information, and the lack of privacy controls

enacted by the users. So, users may be putting themselves at risk both offline (e.g., stalking) and online (e.g., identify theft).

7.4 SUMMARY

It is not simply enough for knowledge to reside within an organisation as knowledge that is not effectively utilised is essentially a wasted resource, instead knowledge needs to be actively managed. There are several mechanisms that can be used to manage public sector or private sector organisational knowledge. However, the challenge of managing knowledge is a daunting task for any organisation. An organisation's knowledge resources are complex and multifaceted, ranging from tacit components to knowledge that is explicitly represented. Providing access to key tacit and explicit knowledge to decision makers during potential changes seems to be critical for effective decision-making. Recent technological developments have made a significant and positive impact on the ability and desire to manage knowledge. The study revealed that conventional, simple and cost effective KM techniques and technologies such as telephone, internet, face-to-face meetings, WhatsApp, and formal education and training programmes are effective and extensively used. It is surprising to see that WhatsApp is very widely used technology compared to other modern technologies. It is considered as a source for sharing knowledge within social media and it is an instant messaging application for smartphones. It allows users to exchange images, videos, and audio or written messages using their Internet connection. Therefore, it is positioned itself as a superior alternative to SMS messaging, which can be very expensive when used in foreign countries due to roaming charges.

Results show that all KM techniques and technologies, apart from coaching and mentoring, cross-functional collaboration, help desks and interaction with citizens are not significant (>0.05), and therefore, there are no significant statistical variations between the responses of the 'directors' and 'managers' on effectiveness of KM techniques and technologies. Whereas, modern KM techniques and technologies such as Viber, FaceTime, LinkedIn, Informal networks, and knowledge maps are least effective and less used. Social networks has been contributing to the development and strengthening of organisations by means of collaborative work between people. Hence it helps to extract the tacit knowledge from external sources. However, various restrictions pertaining to internet and social media usage by the KSA Government is hindering the implementation of KM practices. Government and public service delivery is taking place in a changed world. A significant level of social, economic and political activity is now happening on the social networks. It offers a nascent but rapidly growing opportunity to overhaul and significantly enhance the process by which Saudi Government understands society and the impact of its policies. Therefore, the KSA government should take a greater leadership role in shaping the information environment and the role of emerging technologies in society that have significant impacts. The level of usage of knowledge maps is relatively low in the KSA public sector organisations. Therefore, there is an urgent need for developing and deploying sector-wide knowledge mapping awareness programmes. Knowledge maps are powerful tools to inventory an organisation's critical knowledge and pinpoint areas that may be at risk.

The KM practitioner should assess the available departmental IT capabilities to support KM, with more emphasis placed on collaboration, networking and connecting solutions in the first instance, rather than looking at large-scale, expensive enterprise content and document management solutions where there are plenty of failed and costly stories of end-user not

buying in. It is advised not attempt to develop in-house wherever possible, but to buy and modify off-the-shelf solutions in the first instance, commonly those that are cloud-based. However, using collaborative technology alone to support knowledge sharing will not fully address the needs of the learning organisation, with the human touch and access to live subject matter experts being crucial to success. KM collaborative tools can assist with faster connection to these experts.

The chapter concludes that to gain competitive advantage, it is necessary for KSA public sector decision makers to recognise and use a blend of ICT and non-ICT based KM techniques and technologies. It is advisable to use conventional, simple, low cost, and easy to use with minimum training needs KM techniques and technologies. It should note that KM techniques and technologies roles are not mutually exclusive and KSA public sector organisations may adopt any combination of them to tackle their particular issues or support particular motives.

This chapter has addressed third research question of the current study, which is "what are the key KM techniques and technologies that are used in the KSA public sector organisations" and fourth research question of this study, which is "how effective are the key KM techniques and technologies that are used in the KSA public sector organisations". In doing so, this chapter addresses the third research objective of this study, which is "to explore and document the usage and effectiveness of key KM techniques and technologies". The next chapter (i.e. Chapter 8) will discusses the main challenges associated with managing knowledge in the KSA public sector organisations.

CHAPTER 8: KEY CHALLENGES FOR IMPLEMENTING KNOWLEDGE MANAGEMENT INITIATIVES

8.1 INTRODUCTION

This chapter discusses on the key challenges which KSA public sector organisations face in managing knowledge. The study revealed ten key challenges for managing knowledge in the KSA public sector organisations. They are: lack of government support for using new technologies, lack of awareness of knowledge, lack of leadership support, lack of knowledge management framework, lack of business case for knowledge management, cultural issues, lack of employee commitment, lack of rewards, lack of training programmes on knowledge management, and lack of appropriate tools for knowledge management. This chapter discusses the challenges for managing knowledge in the KSA public sector organisations. The findings are also substantiated with relevant literature. Finally, section 8.3 summarises the key findings. In doing so, chapter 8 addresses part of the fourth research objective, which is "to critically appraise and document the main challenges associated with managing knowledge in the KSA public sector organisations." and fifth research question, which is "what key challenges do the KSA public sector organisations face in managing knowledge" of this study.

8.2 THE KEY CHALLENGES FOR MANAGING KNOWELDGE FOR KSA PUBLIC SECTOR ORGANISATIONS

Through the online survey, respondents were asked to indicate the challenges for managing knowledge on a 4-point Likert item: 4 = Very challenging, 3 = challenging, 2 = Fairly challenging, and 1 = Not at all challenging. It is apparent from Table 8.1 that lack of rewards

(2.79), lack of training programmes on knowledge management (2.77), lack of business case for knowledge management (2.75), lack of employee commitment (2.74), and lack of knowledge management framework (2.71) are most challenging issues for managing knowledge in the KSA public sector organisations. Whereas, the five least challenges for managing knowledge are: lack of government support for using new technologies (2.50), cultural issues (2.52), lack of awareness of knowledge (2.62), lack of leadership support (2.63), and lack of appropriate tools for knowledge management (2.69).

The t-test for equality of means was carried out to investigate if there were any significant differences between 'directors' and 'managers' insights on the challenges for managing knowledge (at the 0.05 significance level) (refer Table 8.1). Results here show that all challenges for managing knowledge, apart from lack of knowledge management framework and lack of business case for knowledge management, are not significant (>0.05), and therefore, there are no significant statistical variations between the responses of the 'directors' and 'managers'.

Table 8.1: Key challenges for managing knowledge within the KSA public sector organisations

No.	Key challenges for managing knowledge	Overall challenge	Rank	Directors	Managers	t_{cal}	Significant value (ρ)
1	Lack of government support for using new technologies	2.50	10	2.56	2.42	0.719	0.474
2	Lack of awareness of knowledge	2.62	8	2.69	2.53	0.825	0.411
3	Lack of leadership support	2.63	7	2.66	2.58	0.427	0.670
4	Lack of knowledge management framework	2.71	5	2.88	2.47	2.386	**0.019***
5	Lack of business case for knowledge management	2.75	3	2.91	2.51	2.049	**0.043***
6	Cultural issues	2.52	9	2.55	2.49	0.327	0.745
7	Lack of employee commitment	2.74	4	2.78	2.67	0.578	0.565
8	Lack of rewards	2.79	1	2.80	2.79	0.031	0.976
9	Lack of training programmes on knowledge management	2.77	2	2.77	2.77	-0.009	0.993
10	Lack of appropriate tools for knowledge management	2.69	6	2.75	2.60	-0.795	0.428

8.2.1 Lack of incentives and rewards

In this study, with overall mean value of 2.79, lack of incentives and rewards are the first most important challenge for managing knowledge in KSA public sector organisations. Hariharan (2002) noted that lack of incentives and reward system can be challenge as it discourages staff to create, share, and use knowledge. Incentives can be provided by recognition, vision, and inclusion of knowledge performance in evaluation systems and motivations. In addition, organisational objectives are not done unless they combine the concept of incentives and rewards to workers. According to Bhirud *et al.* (2005) stated that staffs are more likely to share their knowledge simply when motivated. Witt (1999) indicated that without the establishing of organisational reward and recognition systems, it may be complicated to align knowledge management and business needs of the organisation.

8.2.2 Lack of training programmes on knowledge management

In this study, with overall mean value of 2.77, lack of training programmes on KM are the second most important challenge for managing knowledge in KSA public sector organisations. The public sector organisations have department responsible for the training and advancement of members of sector staff (the General Directorate of Training and Scholarship) and this directorate needs to ensure that 'effective communication' for important training programmes and this is a core subject for trainees. The public sector provides services conventionally in contrast private sector provides services through coaching and distance learning of courses and information on the internet, this is enhancing the influence of training for common citizens and to enhance public education (OECD, 2002). So, knowledge-oriented private organisations are meeting more customer demands and receiving

more customisation, these organisations would also expect comparable advantages from the public sector.

Effective implementation of KM strategies requires the organisation to possess an aware and skilled workforce who can fit into the KM culture and in this regard managerial competency is of the utmost importance (Dewhurst *et al*., 2013). Therefore, the organisation can face a lack of effective and competent managers who are capable of handling and managing KM activities within the organisation. This is another area in which the training directorate needs to take direct action. The directorate can ensure that every member of staff at the organisation has at least a basic grounding in the required competencies and that managers are not appointed unless they are competent in every aspect. This is an area the organisation needs to follow the practices of the private sector and learn from the major companies that already utilise KM effectively and efficiently.

8.2.3 Lack of business case for knowledge management

In this study, with overall mean value of 2.75, lack of business case for KM is the third most important challenge for managing knowledge in the KSA public sector organisations. Organisations require both tangible assets (such as buildings, plant, equipment etc.) and intangible assets. Whilst tangible assets remain essential for production, intangible assets (such as knowledge) are considered to be a major source of competitive advantage as they represent a significant proportion of the market value of some organizations (Tiwana, 2002).

The business case for KM should built around the need to meet the following challenges: to effectively apply operational knowledge, best practices and lessons learned in a more consistent way for operational efficiencies; to manage and capitalise on the wealth of information and knowledge in the organisation in order to maximise human capital and enhance operational performance; to introduce a formal KM approach with clear governance and processes and a dedicated team to implement best practices and encourage a knowledge sharing culture; to transfer knowledge and experience, which was considered very important as experienced mature staff and expatriate contractors.

The business case should clearly demonstrate the potential benefits and clear business value for the department, with a focus on solving real business and operational needs and with clear measures of success. Supported by business value analysis, the business imperative can be shaped, focusing on the value needs of the business versus the ability to deliver cost effectively. KM can help to establish competitive advantage, effective decision making and innovation by managing the required relevant resources and people's intellectual capital to achieve effective service delivery (Schutte and Barkhuizen 2013).

8.2.4 Lack of employee engagement and commitment

In this study, with mean value of 2.74, lack of employee engagement and commitment is the fourth challenge for managing knowledge in the KSA public sector organisations. Chandrasegaran *et al*. (2013) noted that indicated that positive and high level of employee engagement and commitment tends to promote the extent of benefits that organisations can derive from KM activities. A lack of engaged and committed individuals can be a serious matter of concern for the public sector in KSA. In reality, this is yet another area in which the

training directorate needs to take action to ensure that the staff members are valued as knowledge workers (Chu *et al*., 2010). This is also closely related to staff retention; not necessarily a problem for the public sector but nevertheless, the more valued a member of staff feels, the more likely they are to remain in the employment of the organisation.

8.2.5 Lack of knowledge management framework

In this study, with overall mean value of 2.71, lack of KM framework is the fifth most important challenge for managing knowledge in KSA public sector organisations. Tsoukas (1996) noted that KM framework in organisations is to provide a common sense of way for KM initiatives. Knowledge is a critical component of an organisation's assets and KM is increasingly seen as a necessary component of asset management. A KM framework has been presented that includes elements and activities to improve efficiency, skills, transitioning employees, knowledge sharing and learning.

Skyrmer's (1998) framework provides details of various appliances that can be deployed to enhance the various KM functions. For instance, the tools can assist with the identification of knowledge (text mining, data mining and knowledge discovery), the creation of knowledge (conceptual mapping and thinking aids), the collection of knowledge (intelligent agents), the storage of knowledge (databases) and the application of knowledge (decision support tools and video conferencing) (Shongwe, 2016). The KM processes framework developed by Bukowitz and Williams (2000) is based on two activities that take place concurrently within organisations, namely, marrying intellectual capital with strategic requirements, and the daily application of knowledge to react to market developments. The framework offers a basic interpretation of how knowledge is formed, preserved and utilised so as to generate value.

This is achieved by means of two processes: tactical and strategic processes. Market developments in terms of demand and emerging opportunities drive the tactical process, whereas developments in the macro-environment drive the strategic process. The tactical process involves four stages: obtaining information, applying that information, learning from the information, and adding to it. Meanwhile, the strategic process involves three stages: evaluating information, compiling a database, and divesting the information. By applying these processes, organisations are able to utilise their body of knowledge so as to react to market developments in the most appropriate way (Shongwe, 2016).

8.2.6 Lack of appropriate mechanisms for knowledge management

In this study, with overall mean value of 2.69, lack of appropriate mechanisms for KM is the sixth important challenge for managing knowledge in KSA public sector organisations. The essence of KM is to develop a special dynamic capability, a KM capability, that aligns firms' knowledge resources with the needs of the changing market (Gold *et al*., 2001; Lewin *et al*., 2011). KM strategy seeks to achieve this alignment by developing governance mechanisms and learning routines, which constitute the micro-foundations of the KMC (Foss and Michailova, 2009). Governance mechanisms are deployed to facilitate organizational learning, which reconfigures knowledge resources and operating routines to deliver services and products that meet the needs of the market at any time in its evolution (Foss and Michailova, 2009 ; Chen and Fong, 2015).

8.2.7 Lack of leadership support

In this study, with overall mean value of 2.63, lack of leadership support is the seventh most important challenge for managing knowledge in KSA public sector organisations. According to Chandrasegaran *et al*. (2013) stated that efficient KM cannot be ensured on a long-term basis in organisations if leadership support and participative leadership is unavailable for organisations. Thus, for the public sector organisations a lack of effective and proactive leadership can also seem as a challenge in the long-run. According to Hmshari (2013) stated that leadership training is an important key to effective KM. This is because unless the management display KM characteristics, the rest of the staff will not do so. If any organisation, public or private, has a shortage of effective and successful leaders it will not be prosperous or worthwhile. Cultivating leadership in management trainees must be an essential element of the programme for the training directorate in the same way that it is regarded as essential in the private sector.

8.2.8 Lack of awareness of knowledge

In this study, with overall mean value of 2.62, lack of awareness of KM is the eighth main challenge for managing knowledge in KSA public sector organisations. Where KM should reside holds crucial significance for longevity and effectiveness (Groff and Jones, 2012). For the public sector organisations will be a main challenge for deciding and knowing where KM should reside because this will directly affect the KM initiative within the public sector organisations. This is the major reason that it is essential to carry out a knowledge audit and draw up a knowledge map. The knowledge map is a fundamental tool for the knowledge manager because it allows the manager to categorically know what knowledge is where. This

allows the manager to use retiring staff to pass on their special knowledge to the new intake so that their knowledge is not permanently lost when they reach retirement (Hau *et al*, 2013).

8.2.9 Cultural issues

In this study, with overall mean value of 2.52, cultural issues is the ninth important challenge for managing knowledge in KSA public sector organisations. The positive execution of KM in organisations poses the biggest challenge of cultural differences and compatibility (Dehghani and Ramsin, 2015). How individuals relate with each other and the dynamics of public sector culture as an organisation can be a serious challenge for the public sector organisations while implementing KM because it requires the presence of a positive and shared culture. To ensure that KM fits comfortably with the national cultural ideals, it needs to be emphasised that KM involves all parties; it is representative of collectivism, not individualism and as such should be fully acceptable to the citizens of KSA. Other cultural considerations associated with KM in the public sector could be connected to attitudes to overseas workers and to women but these must be resolved internally in a way that does not offend Sharia law or the constitution and emphasises that knowledge held by any individual is of value to the public sector and must be used to its best extent, using a Knowledge Map of the public sector as a starting point.

8.2.10 Lack of government support for using new technologies

In this study, with overall mean value of 2.5, lack of government support for using new technologies is the tenth challenge for managing knowledge in KSA public sector organisations. According to Lopez *et al*. (2009) stated that the awareness, presence and use of

technology tools are another main challenge that organisations face during KM activities because effectiveness and rapidness are required in KM initiatives and it will be difficult for the public sector organisations to identify quick and responsive KM technology-based tools for enhancing the end results of KM for the public sector organisations.

According to Kingston (2010) indicated that the public sector organisations must accurately choose the best technology for their special needs. There are various different methods to sharing knowledge and each demand various technological hardware. Therefore it is essential to plan both aspects when trying to keep up with technology; it is also necessary for the organisations to ensure that any new systems remain appropriate with the existing or legacy IT systems to maintain older records and knowledge. The technological part of KM involves systems and applications that help storage and knowledge sharing, as well as partnership and communication between workers. Such KM systems are vital for utilisation and knowledge retrieval, as well as for preventing fragmentation of knowledge documents (Hustad, 2017).

8.3 SUMMARY

Korsakiene *et al*., (2018) stated that bureaucratic culture, a lack of rewards and personal initiatives prevent knowledge sharing in public organisations. There are some challenges in KM execution including lack of rewards, lack of training programmes on KM, lack of business case for KM, and lack of employee commitment. Currently, traditional management is not basically effective for the challenges of knowledge sharing and use, as well as the intellectual ownership.

Ten challenges KSA public sector organisations face in managing knowledge were listed and discussed. They are: lack of government support for using new technologies, lack of awareness of knowledge, lack of leadership support, lack of knowledge management framework, lack of business case for knowledge management, cultural issues, lack of employee commitment, lack of rewards, lack of training programmes on knowledge management, and lack of appropriate tools for knowledge management. Furthermore, results show that all challenges for managing knowledge, apart from lack of knowledge management framework and lack of business case for knowledge management, are not significant (>0.05), and therefore, there are no significant statistical variations between the responses of the 'directors' and 'managers'.

The challenge of managing knowledge is a daunting task for any organisation. An organisation's knowledge resources are complex and multifaceted, ranging from tacit components to knowledge that is explicitly represented. The ultimate key to organisations successfully embracing KM initiatives into daily operation is leadership. Effective leadership requires a particular set of attributes that enables to extract ideas and knowledge from stakeholders and transfer this knowledge into organisational assets.

Overall, the following inferences and implications could be documented:

- Government support for using new technologies, awareness of knowledge, leadership support, KM framework, business case for KM, cultural issues, employee commitment, rewards system, training programmes on KM, and appropriate tools for KM are key factors for managing knowledge in the KSA public sector organisations.

- To address public sector issues, knowledge is increasingly being accessed and shared across sectors and national boundaries. Cross boundary knowledge transactions also apply to boundaries within organisations, between functional specialism's and between disciplines. Therefore, stakeholders' collaboration is essential for managing knowledge in the KSA public sector organisations.

This chapter has addressed the fourth research objective of the current study, which is "to critically appraise and document the main challenges associated with managing knowledge in the KSA public sector organisations."; and research questions fifth, which is "what key challenges do the KSA public sector organisations face in managing knowledge?". The next chapter (i.e. Chapter 9) will discusses the benefits of KM practices for KSA public sector organisations.

CHAPTER 9: KNOWLEDGE MANAGEMENT BENEFITS FOR THE KINGDOM OF SAUDI ARABIA PUBLIC SECTOR ORGANISATIONS

9.1 INTRODUCTION

This chapter discusses results from the current study on the benefits of Knowledge Management practices for KSA public sector organisations. The discussion is based on online survey data collection and analysis of a total of 107 fully completed and usable questionnaires. The findings are also substantiated with the relevant literature. In doing so, this chapter addresses the sixth research question of the current study, which is "what are the key KM benefits for the KSA public sector organisations?" (See page 16). In doing so, this chapter addresses the fifth research objective of this study, which is "to critically appraise and document the extent to which managing knowledge contribute to KSA public sector competitiveness.

9.2 KM BENEFITS FOR THE KSA PUBLIC SECTOR ORGANISATIONS

Through the online survey, respondents were asked to indicate the extent to which managing knowledge contribute to KSA public sector organisations competitiveness on a 4-point Likert item: 4= very effective, 3= effective, 2= fairly effective and 1= not at all effective. It is apparent from Table 9.1 that the KM have a very high positive impact on improving citizen relations (3.18) whereas to improved knowledge sharing across departments (2.83) has a least positive impact of KM. This is followed by: to improve productivity (3.10), to improve service innovation (3.08), to improve knowledge of workers (3.07), improve organisational knowledge (2.97), and reduced rework (2.81). This is understandable because, through

capturing and sharing best practices, lessons learned, and fresh new ideas from the internal and external sources could provide critical knowledge to 'knowledge workers' efficiently and effectively to reduce cost and time while improving the quality of performance (Liebowitz, 1999). Therefore, the current study results clearly suggest that KM have a very high positive impact on citizen relations.

The t-test for equality of means was carried out to investigate if there were any significant differences between 'Directors' and 'Managers' insights on the KM benefits for the KSA public sector organisations (at the 0.05 significance level) (refer Table 9.1). Results here show that there are no significant statistical variations between the responses of the 'Directors' and 'Managers'.

Table 9.1: KM benefits for the KSA public sector organisations

No.	KM benefits for the KSA public sector organisations	Overall usage	Rank	Directors	Managers	t_{cal}	Significant value (ρ)
1.	Improved knowledge sharing across departments	2.83	7	2.73	2.98	-1.379	0.171
2.	Improved productivity	3.10	2	3.02	3.23	-1.225	0.223
3.	Improved knowledge of workers	3.07	4	2.98	3.19	-1.133	0.260
4.	Improved citizen relations	3.18	1	3.06	3.35	-1.690	0.094
5.	Improved service innovation	3.08	3	3.02	3.16	-0.785	0.434
6.	Reduced rework	2.93	6	2.81	3.12	-1.577	0.118
7.	Improved organisational knowledge base	2.97	5	2.98	2.95	0.163	0.871

9.2.1 Improved citizen relations

In this study, with overall mean value of 3.18, KM have very high positive impact on improved citizen relations. Mapping, capturing and sharing knowledge brings fresh and stimulating ideas into the organisations from the internal and external sources. This in turn contributes to the innovation process being defined as 'bringing new ideas to market' (Amidon, 1997). When an organisation produces a product and/or service in an innovative way, sustainable product and/or service adds value to an organisation. This new value, in turn, fosters reputation (Rikowski, 2007). This study results clearly suggests that organisations are improving their citizen relations through managing knowledge.

Nava (2007) stated that advantage of the opportunities provided by KM for improving the quality of life of the citizens, with efficiency, transparency and participation. Al-Enzi (2017) stated that organisations cannot generate knowledge without people, when individual's knowledge is transported to others, their knowledge will have high impact on the performance of organisations. If there is a vast information and knowledge divide within the local communities and external organisations, this will cause lack of connectivity between people with public interests those results in low relationships within the community. At the same time, if knowledge sharing is poor, leading to low awareness of modern improvements that help them to take good decision (Basak *et al*., 2017). Therefore, KSA government is encouraging the citizens to participate and realize the vision that benefits in the future by sharing lessons learned and best practices within public sector organisations. When citizens feel intrinsically motivated by the government attention to improve citizen relations, this in itself will make everyone work honestly. Thus, aligning future decision-making and clear long-range planning (Kaiser *et al*., 2017), citizens should be involved by the vision as it is their future that is being addressed.

9.2.2 Improved productivity

In this study, with overall mean value of 3.10, KM have a very high positive impact on improved productivity. Abualqumboz *et al*., (2017) stated that the knowledge sharing within organisation and the organisation obtained productivity advantages, such as a decrease of cost associated with applying knowledge. Managers should create a suitable context to encourage workers to share knowledge and feel more committed to the organisation (Ruíz *et al*., 2017). Many research studies have shown that few of the government organisations have implemented KM (Batista and Quandt, 2017). However, there are a lot of the academic and empirical studies confirmed that the KM brings numerous positive results, such as productivity growth and performance improvement (Kucharska and Wildowicz-Giegiel, 2017). Workers should sense the need to increase persistently and improve their level. Also, having new opinions, they should be able to use the organisation's experience, and thus be able to improve the quality of their work and productivity (Brito *et al*., 2017).

As Drucker (1995) noted that the productivity of knowledge is increasingly going to be the determining factor in the competitive position of a country, an industry, a company. Ledimo and Martins (2017) stated that knowledge workers who have good vision can realise innovations leading to productivity improvement. The interactions between workers in a shared language, with nearer interpersonal ties that positively impact knowledge flows and information exchange within the organisation. This will be increasing their engagement, satisfaction, and productivity (Gope *et al*., 2017).

9.2.3 Improved service innovation

In this study, overall mean value of 3.08, to improved service innovation is the third highly effective KM impact on KSA public sector organisations. Service innovation depends on organisational and human capital aspects relative to more tangible assets (Mina *et al*., 2014). Service organisations depend on technologies and non-R&D innovation expenses and use external knowledge sources than manufacturing. According to Tether (2005) stated that service organisations show participate with their customers and suppliers. Therefore, this practice has positive effects on organisation innovation performance (Mina *et al*, 2014). Some studies indicate that services innovation increases with knowledge intensity level, thus that knowledge intensive services show innovation performances for organisation (Love *et al*, 2011). According to Mina *et al*., (2014) indicated that business model innovation confirms investigate how organisations improve, distribute and suitable value and how organisations can adapt to new environments and gain competitive advantages. Therefore, organisations can get nearer to their clients, promoting understanding of users' needs, increasing relationships and loyalty. According to Chesbrough (2011) indicated that organisations will search for external knowledge that might be essential to sustain an integrated business model innovation. Successful innovation is dependent on the knowledge inputs within organisation. Knowledge flows have the possibility to develop the organisation's current output, for instance, by disclosing knowledge to allies, workers or suppliers and mix valuable feedback (Mina *et al*, 2014). Organisations use improved service innovation to gain competitive advantages, as well as use and exchange of knowledge play a key role in value creation.

9.2.4 Improved knowledge of workers

To produce high-quality products, to deliver impeccable service and to keep abreast of technological development organisations require skilled employees. They need to hire employees who are able to share knowledge and develop firm-specific competencies. Without skilled employees firms cannot develop core competencies (Leonard-Barton, 1992). The core competence of the organisation lies in the knowledge and skills of its people. Basic codified systems do not create competitive advantage. It is the skills and abilities of people that dictate the future of the organisation.

In this study, with overall mean value of 3.07, to improved knowledge of workers is the fourth highly effective benefit of managing knowledge in KSA public sector organisations. There is an organisation's strategy process is named as the ''knowledge force'', that is powered by the knowledge workers (Drucker, 1995). Breunig and Skjølsvik (2017) states that new technology and digitalization will change the way knowledge workers are delivering services. In fact, the method of organisational culture develops is relevant for knowledge activities of an organisation, also how be making new interactions by the effective management of its intangible assets (Erkut and Kaya, 2017). Knowledge sharing and the organisation structures in decision making processes of the knowledge workers can be seen as a way of managing intangible assets for making interactions (Erkut and Kaya, 2017). For example, Malaysian private hospitals to provide high quality services depend on the KM that is adding value to the knowledge workers, products and interactions (Hamzah *et al*., 2017). Communities promote knowledge workers by ideas sharing and knowledge about work related problems (Handzic, 2017). Knowledge workers need improved tools for information, knowledge, and analytics to know the varying markets and customer requirements (Inkinen and Steinhöfel, 2017). It is obvious that competitive advantages change with the varying

market situations, technologies and organisational structures especially when they are built upon the tacit knowledge of their knowledge workers (Kaya and Erkut, 217).

9.2.5 Improved organisational knowledge

In this study, with overall mean value of 2.97, to improved organisational knowledge is the fifth effective benefit of managing knowledge in KSA public sector organisations. According to Birasnav (2014), indicated that organisational knowledge has created in discussions with opinions. Hence, as workers learn and share knowledge with other workers, real human capital is generated and organisational knowledge takes place. In additional, KM technologies should capture and share such this knowledge. There are many of knowledge and experience residing within organisation but the main challenge is facing organisational knowledge in understanding of the most suitable media for various types of individual and collective experience and maybe the knowledge cannot be formalised (Bencsik and Hevesi, 2017). Corcoran and Duane (2017) stated that there is largely neglected in organisational knowledge, this leads low levels of KM implementation within organisations and knowledge sharing. Wang *et al*., (2014) indicated that practicing knowledge sharing results in improved organisational knowledge and impact the public interaction for organisational learning. Sharing knowledge via social media tools that are considered useful to the performance and competitive advantage within organisations (Corcoran and Duane, 2017). Duryan and Smyth (2017) indicated that the development of organisational knowledge depends on the ability of the organisation to improve the horizontal social network by people can share knowledge and experience. Abualqumboz *et al*., (2017) indicated that trust plays important role in organisational knowledge sharing between individuals but doubt may make them to be hesitant to share their knowledge. Ruíz *et al*., (2017) indicated that build new organisational

knowledge via using workers' present knowledge, thus organisation should implement various strategies.

9.2.6 Reduced rework

In this study, with overall mean value of 2.93, to reduced rework is the sixth effective benefit of managing knowledge in KSA public sector organisations. The KSA public sector organisation uses a work organisation principles and techniques to attain shorter lead-times, reduced cost, and higher quality. KM facilitates the understanding of business needs, the obligations of employees, and wrong information that decrease the effectiveness of the work. Loureiro *et al*., (2017) indicated that provide the knowledge of the changes that have happened in the work environment as well as involve workers in business and facilitate organisational communication be clear and objective that will benefit and assist interaction with all sectors to work to allow the participation of workers with the aims of the organisation. Management understand that skills and telling its workers what to do without sensitivity mean that such management has belief in their decision making abilities. If organisation ensures that its employees are making good decisions, this will be reduced rework (Awad, 2017).

It is apparent from the above results that systematic mapping, capturing and sharing of knowledge have a high positive impact on improved efficiency. Improved interaction and iteration between knowledge workers, augmented by technology such as computer conferencing, effectively amplifies knowledge from being tacit and individual into a form that is more widely used throughout the organisation on an ongoing basis (Skyrme and Amidon, 1997). Therefore, organisations can improve their efficiency significantly. As

Liebowitz (1999) states, that an active and dynamic implementation of KM practices is critical to enable performance, problem-solving and decision-making in knowledge intensive organisations.

9.2.7 Improved knowledge sharing across departments

In this study, with overall mean value of 2.83, to improved knowledge sharing across departments is the seventh effective benefit of managing knowledge in KSA public sector organisations. Knowledge sharing between workers is important period in the development of an organisational knowledge. The positive knowledge sharing' impact over organisational performance and innovation (Leal *et al*., 2017). The first author to publish about knowledge sharing in management was Japanese researcher is called Niwa in 1990, but under a vision of engineering. He has suggested some strategies of knowledge creation (Leal et al., 2017). Hansen (2002) indicated that sharing of knowledge shows a significant role in helping the organisation obtaining its best practices, and in reducing the effort of workers to gain new areas of knowledge. Leal *et al*., (2017) indicated that the importance of motivational factors on worker's attitude towards knowledge sharing. Ben-Menahem *et al*., (2016) stated that knowledge sharing by open communication is the necessary for creation of collective knowledge. Kucharska *et al*. (2017) indicated that impact tacit knowledge sharing included exchange and enjoyment, and social elements as trust, tie and aims as elements which generate the social capital.

There are things are considered hostile to knowledge sharing such as hoarding of knowledge, and apprehension of failures (Kucharska and Wildowicz-Giegiel, 2017). Organisation culture is considered as a significant effective affecting a knowledge sharing across departments

(Kathiravelu *et al*., 2014). According to Suppiah and Sandhu (2011) indicated that organisational culture is a major in KM initiatives, a main part of that is knowledge sharing. Organisational culture has positive impacts on employees are willing to share knowledge in spite of the instructions coming from top management (Kucharska and Wildowicz-Giegiel, 2017). Therefore, knowledge sharing across departments is a necessary for knowledge creation and distribution leads to organisational performance.

9.3 SUMMARY

This chapter discussed the benefits of KM on the KSA public sector organisations. In summary, it can be stated that innovation and KM should be viewed as important activities of the firm as both can provide sustained competitive advantage. Indeed, it is possible to state that it is not possible to succeed in today's knowledge intensive global environment without the planned implementation of each. Nor would it be possible to achieve success by focussing solely on innovation or KM. To be innovative in highly competitive and global industries requires the effective use of KM (Brand, 1998). Both innovation and KM require appropriate organisational culture and structure if they are to prosper. Knowledge repositories are needed to build a store of knowledge that can then be reactivated to contribute to innovation. The perceived degree of positive impact of KM on improving citizen relations is high whereas least positive impact on improved knowledge sharing across departments. This is followed by: to improve productivity, to improve service innovation, to improve knowledge of workers, improve organisational knowledge, and reduced rework. Results show that there are no significant statistical variations between the responses of the 'Directors' and 'Managers'.

Overall, the following inferences and implications can be drawn:

- In view of rapid globalization, immigration and communication, the current era is characterized by change, not stability, and this reality confronts most public sector organisations, societies and governments worldwide. The knowledge-based economy is reflected in an increasing emphasis on the dissemination and use of knowledge as a source of competitiveness for organisations and countries. This also relates to the issue of innovation. Particularly in the current digital era, there is a need for educational institutions and organisational structures capable of developing creative, innovative and problem-solving capacities which encourage interdisciplinary and growth.
- It was observed, however, that the challenges facing the public sector remain and may be even more pressing today, and with a focused KM attempt following proven best practices and practical implementation steps real added value can be achieved. The focus should be on collaboration, peer-to-peer learning, networking and communities and not IT driven. In addition, with the drive towards better preparation for the knowledge based economy, there is a real opportunity to be more closely aligned with the human capital agenda and to nurture, build and support this most valuable asset. The proven approaches, methods and processes of the pure KM discipline will prove invaluable to steer continuous performance improvement success.
- The corporate path to doing well by doing good has become the smart way to do business – only if organisations have the right knowledge and competencies required for it. Therefore, managing knowledge assets associated is essential to improve competitiveness in terms of cost savings, community relation, and productivity.

This chapter has addressed the fifth research objective, which is "to critically appraise and document the extent to which managing knowledge contribute to KSA public sector competitiveness", and sixth research question, which is "what are the key KM benefits for the KSA public sector organisations?". The next chapter (i.e. Chapter 10) will discuss the framework for managing knowledge in the KSA public sector organisations benefit.

CHAPTER 10: KNOWLEDGE MANAGEMENT FRAMEWORK FOR ADDRESSING PUBLIC SECTOR ISSUES

10.1 INTRODUCTION

This chapter presents knowledge management framework for the benefit of KSA public sector organisations. Careful consideration was given to each of the previous stages of the research process when devising the selected framework. This framework serves as a guide for successfully integrating KM initiatives in the decision-making processes that occur on a daily basis. This framework is intended to offer guidance for the successful implementation of KM programs. As such, Chapter 10 helps to realise the sixth research objective which is concerned with developing and validating a KM framework that will ultimately benefit public sector organisations in KSA.

10.2 RATIONALE FOR THE KNOWLEDGE MANAGEMENT FRAMEWORK

Knowledge Management provides organisations with the opportunity to derive value from their intangible assets. As such, it is concerned with how the knowledge within an organisation and its stakeholders can be deployed with positive results. Davenport and Prusak (1998) state that knowledge is the result of putting minds to work. It is a fluid combination of insight, experience, values, and actionable and contextual information that results in a framework capable of appraising and utilising new information. In the context of the current study, KM is regarded as being an integrative and systematic process that allows an organisation to capture, share, create, map and learn collectively from all of it stakeholders and beyond so as to help achieve significant organisational sustainability goals.

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Given that the economy is becoming increasingly information-based, public sector organisations require ready access to knowledge if they are to perform well. The storage and dissemination of information has been helped by the use of information technology, thereby facilitating the formation of a technological, economic and organisational knowledge-based landscape. KM objectives are significantly easier to realise thanks to the availability of technology. KM is effectively a tool that organisations can use to enhance the performance of actions, applications and activities including generating knowledge, codifying knowledge and transferring knowledge (Ruggles, 1997). KM activities such as the sharing of information, organisational memory, organisational learning and collaborative decision support are all easier to achieve because of the availability of information technology (Tiwana, 2002).

According to Wiig (1993) stated that a framework provides insight into the prevailing conditions in a particular domain, establish what is achievable, outs the methods into context and clarifies the efficacy of the various competing methodologies (Shongwe, 2016).

Shongwe (2016) noted that many frameworks have been created over the years. In accordance with this notion Tian (2017) concluded that numerous KM frameworks have been developed, some of which are descriptive (identifying notable KM phenomena), whilst others are prescriptive (suggest methods for how KM should be conducted). It is usually the case that frameworks such as these host the most useful KM processes and sub-processes required to form or acquire knowledge, store it, disseminate it and apply it. A good example of this is Bhatt's (2001) KM process activities model (see Figure 10.1) which has five phases of KM: creation, validation, formatting, distribution and application. These phases effectively enable an organisation to acquire new knowledge, reflect on that knowledge and then relearn it so that the organisation's core competencies can be built, preserved and grown.

Figure 10.1: Big data era knowledge management

Source: Tian, 2017

The availability of too many frameworks can be a source of confusion when undertaking research (Shongwe, 2016) because there are separate processes for each framework. For instance, there are four processes for Alavi and Leidner's (2001) framework but seven processes for Rollett's (2003). Furthermore, the associated terminology can also present a source of confusion, especially when synonyms are used for the purposes of definitions. Dalkir (2011) adds weight to this argument, suggesting that while different terms are used, the various steps in the KM cycle are broadly similar. Consequently, there is a need to develop a single framework that is universally accepted to help reduce confusion (Shongwe, 2016).

However, Tian (2017) notes that shortcomings have been observed in relation to these frameworks, primarily because they overlook the importance of knowledge resources and how they interact (Holsapple and Joshi, 2002). Versions that are more advanced adopt a lifecycle approach whereby KM is tackled in a problem-solving manner (van der Spek and Spijkervet, 1997; Holsapple and Joshi, 2002) or by differentiating between KM and the

processing of knowledge in the cycle of the production, evaluation, integration and application of knowledge (Cavalieri and Reed, 2000; Cavalieri and Seivert, 2005; Firestone, 2001; Firestone and McElroy, 2003). Moreover, Tian (2017) stated that while KM frameworks are usually considered to be sequential, they are not linear. Indeed, in practice there is unlikely to be a start or stop; rather, the different aspects will run simultaneously (Wiig, 2004 and Tian, 2017).

From the responses to the survey, it is apparent that the majority of the respondents believed that a significant challenge facing public sector organisations is how best to capture, map, disseminate and utilise the knowledge of stakeholders in order to create value. This confirms the need for an effective KM framework so that the issues facing public sector organisations can continue to be addressed on a continuous basis. One type of KM system that appears to be particularly well suited to providing organisations with the means to generate, capture, map, disseminate and apply collaborative knowledge so that challenges can be overcome is corporate knowledge portals.

10.3 PROPOSED KNOWLEDGE MANAGEMENT FRAMEWORK

Analysis of survey data and review of current literature, a number of improvement opportunities were identified with the intent to help KSA public sector organisations to improve KM practices.

Key themes	Summary improvement opportunities
No formal Knowledge Management strategy in place	• Organisation should define its KM goals and objectives • Organisation should then develop a KM strategy, including guidance and direction for setting up KM activities within functional groups • Strong executive sponsorship should be secured for the organisation KM program
Knowledge communities operate informally	• A knowledge community framework should be developed to provide program teams and functional teams with the guidance needed to setup and operate effective knowledge communities. This will result in accelerated knowledge sharing and retention, improved decision making, more efficient issue resolution and accelerated collaborative innovation • Key areas to outline in the knowledge community framework include the following: mission, processes, supporting technology, content, membership and defined roles, collaboration, knowledge-sharing behaviors, and supporting organisation, member profiling and talent identification
Limited activities in place to foster a culture of knowledge sharing and cross department collaboration	• There should be a concerted effort to foster and support a culture of knowledge sharing and collaboration. Key activities will include regular communication from leadership regarding importance of KM and knowledge sharing, incentives to encourage knowledge sharing and collaboration across the organisation, and regular training and awareness communications
Several document repositories in place but limited guidance and standards for teams to follow	• As an immediate step, a corporate knowledge portal has to be implemented to provide direct access to the key knowledge sources. • The KM strategy should clearly state the tool of choice for performing key KM functions (Collaboration, content management). This strategy will provide the framework for KM tool rationalisation • The KM strategy should outline the requirements and conditions for new repository creation. • Tool training and communication should be rolled out to facilitate adoption of new KM practices
Document taxonomy and content structures are not standardized	• A standard document repository taxonomy should be developed and communicated across program and functional teams. The document taxonomy should include an interim state to help facilitate access to current documents. • There should also be a long-term taxonomy that is aligned to the IT Operating model to account • Document structure standards and templates should be developed and communicated across the organization to simplify knowledge sharing and communication
Knowledge Management processes are immature and undocumented	• A standard document repository taxonomy should be developed and communicated across program and functional teams. The document taxonomy should include an interim state to help facilitate access to current documents. • There should also be a long-term taxonomy that is aligned to the IT operating model to account for all the process areas • Document structure standards and templates should be development and communicated across the organisation to simply knowledge sharing and communication
No measurements in place to track Knowledge Management effectiveness	• Measurements and metrics should be aligned to KM strategy and objectives • A set of KM metrics and measurements should be developed to track effectiveness of the KM program. This may include conducting surveys among select program and functional teams to evaluate improvement in areas such document version control, easy access to documents, collaboration and knowledge sharing • Reports and dashboards Apps should be developed to improve effectiveness and usefulness of the information. KM reports will also help augment accountability and support adherence to KM standards

Figure 10.2: Summary improvement opportunities of KSA public sector

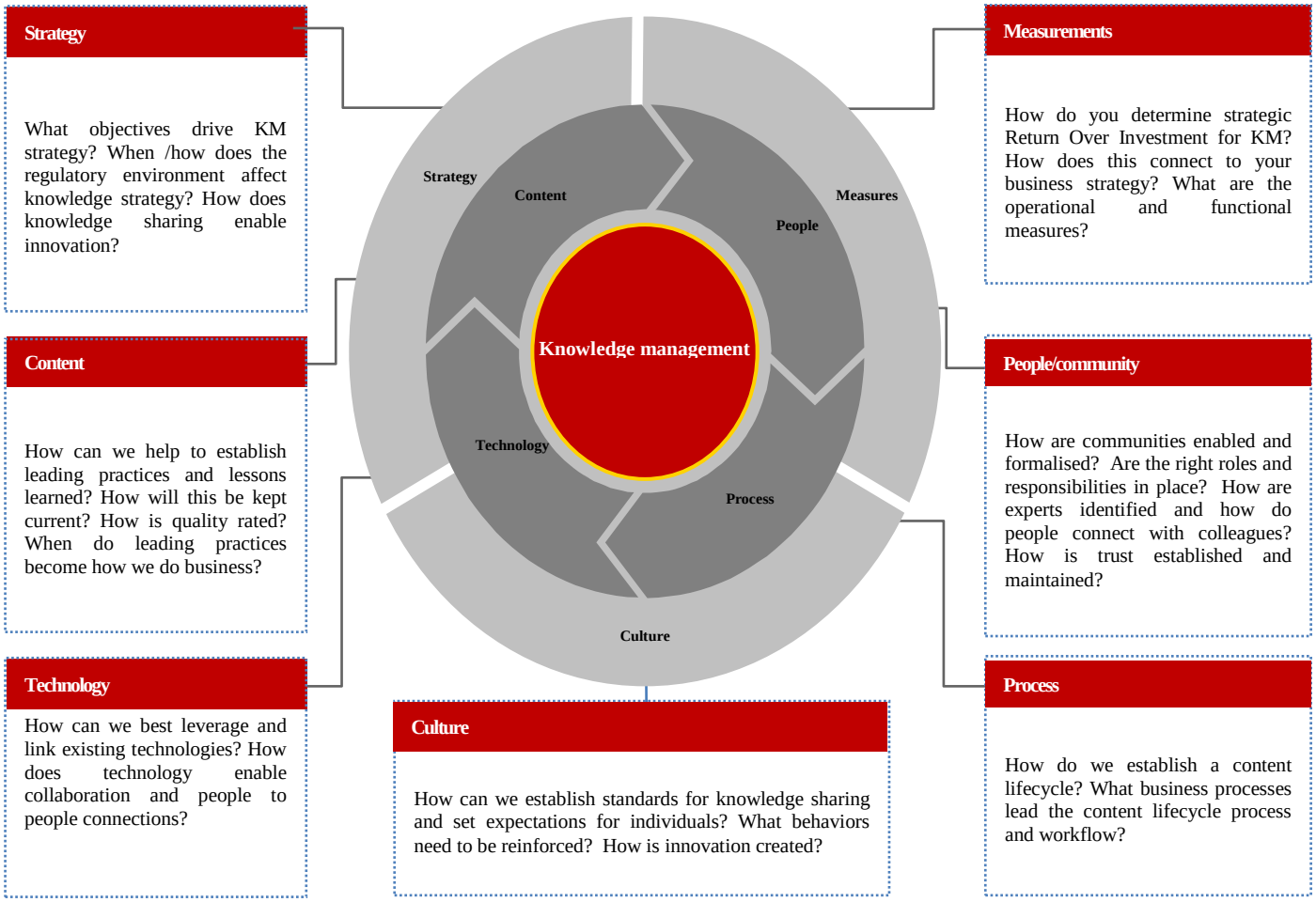

Figure 10.3: Proposed knowledge management framework

Table 10.1: Guidance of implementing KM in KSA public sector

KM dimension	Challenges	Improvement opportunities	Priority	Complexity	Term
Strategy	There is no formal KM strategy in place at the program level or within the input sub-process teams. Knowledge is maintained at different granularity levels across different groups. **Impact**: Without a clear KM strategy KSA public sector is not taking full advantage of its knowledge assets. Teams are left without a clear direction around how to manage and share knowledge to increase value to the organisation. This can lead to inefficiencies within workgroups in place as well as critical programs such as KSA vision 2030.	**Develop a Knowledge Management strategy** Leverage industry leading practices to develop a KM strategy. Key areas to address include the following: • Formal governance model • Strong executive leadership/sponsors • Expected benefits tied to government goals • Organisation and community measures tied to performance The strategy should outline and clarify expectations for KM within projects and programs as well as within departments Department level KM strategy should be derived and customised from the high level strategy to maintain uniformity of standards.	High	Medium	Immediate
		Communicate Knowledge Management strategy Once a strategy is defined, a set of communications should be rolled-out to socialise management's vision regarding KM. This will include direct communication from leadership regarding importance of KM as well as expectations. Communication will also include cascading messaging to program teams and functional teams.	Medium	Medium	Short
People/ Community	Knowledge communities are informally managed and there is no formal community structure in place. **Impact**: Without a formal framework in place to manage knowledge communities, the organisation is at risk of data loss. Valuable knowledge created within communities may be lost as the organisation changes. In addition, key knowledge assets created may not be easily accessible to support decision making, innovation and issue resolution, reducing productivity and efficiency.	**Develop a knowledge community framework** Leverage leading practices to develop a Knowledge Community Framework. Key elements of the framework include • Mission • Processes • Content scope • Membership, roles and responsibilities • Collaboration capabilities • Expected knowledge sharing behaviors • Supporting technology • Supporting organization Better functioning knowledge communities will accelerate knowledge sharing and retention, foster innovation, and improve efficiency of collaborative issue resolution	High	Medium	Short
		Deploy knowledge community framework • Assign KM responsibility to key individuals • Form a community of champions that are passionate about KM and can drive change within their programs or teams • Pilot knowledge community framework on a limited perimeter • Enhance community framework based on lessons learned from the pilot deployment and rollout to the other areas	Medium	Medium	Medium

KM dimension	Challenges	Improvement opportunities	Priority	Complexity	Term
Culture	There limited activities or incentives in place to foster and encourage a culture of knowledge sharing and collaboration The knowledge sharing culture varies across functional teams and programs. **Impact:** Without a concerted effort to develop a culture of knowledge sharing, the organisation is not taking full advantage of its knowledge and resources. A lack of clarity regarding the expected knowledge culture may drive unwanted behaviors	**Define knowledge culture** Management should outline the type of knowledge culture that is expected across the organization. Management's vision should be communicated across the organization	High	Low	Immediate
		Implement mechanisms to foster and maintain culture as the bank changes A set of mechanisms should be implemented to maintain and enhance the desired culture as the organization changes and new resources are hired. Key mechanisms to consider include • Incentives for knowledge sharing and collaboration (E.g. Awards, success stories communications) • Learning programs with a focus on desired knowledge culture • Regular surveys to evaluate progress in achieving desired culture Examples of desirable knowledge culture aspects include the following: • Knowledge sharing and collaboration are behavioral norms • Innovation is rewarded • Individuals are accountable for the quality of documents they contribute into knowledge repositories	High	High	Medium
Process	Knowledge Management processes are informal and undocumented. Current activities are centered around content repository management. For some of the process groups, access rights have been defined for team members. **Impact**: Immature processes undermine the organisation's ability to maximize value derived from knowledge assets and resources. This leads to inefficiencies in the way teams share knowledge and collaborate. Collaborative innovation is also undermined by the absence of formal processes.	**Define formal Knowledge Management processes** Leverage industry leading practices to develop standard KM processes. Key activities to consider • Creating and acquiring (Collection, collaboration, culture procurement, feedback) • Storing and deploying (Access, customisation, context, content architecture) • Applying and adding value (Collaboration, learning, sharing, quality) • Assessing and maintaining (Review, archive, purge)	High	Medium	Immediate
		Deploy standard KM processes with current tools Develop KM procedures and training based on current tools. Identify tactical adjustments to the existing tools that could lead to facilitated process execution and quick wins for the organization. Rollout training and procedures	Medium	Medium	Short
		Deploy standard KM processes with standardised KM tools Once tool standardisation has been completed, update KM procedures and training accordingly. Rollout revised training and procedures.	Low	High	Long

KM dimension	Challenges	Improvement opportunities	Priority	Complexity	Term
Measurements	There are no KM metrics, measurements or reports in place **Impact**: The absence of reporting undermines Management visibility in the area of KM and undermines accountability across the organisation. As a result the value the organization can derive from its knowledge asset is diminished.	**Develop KM metrics, measurements, and scorecards** Leverage KM standard processes to develop relevant metrics, measurements and scorecards. Key questions to address with reporting: • Are the KM enablers available and there and being used? • Is knowledge creation, sharing and retention happening? • Are business results positively affected?	High	Medium	Immediate
		Deploy KM reporting with current tools Implement KM reporting based on existing tools. Develop KM reporting procedures and training. Rollout training and procedures	Medium	Medium	Short
		Deploy KM reporting with standardized KM tools Once tool standardization has been completed, update KM reporting procedures and training accordingly. Rollout revised training and procedures	Low	High	Long
Technology	There is a significant number of KM tools in place. However, there are limited standards or guidance in place regarding how these tools should be used to manage knowledge. Implementation and use of the tool varies widely from department to department. **Impact**: The absence of standards and formal guidance regarding KM tools is leading to inefficiencies and data retention risks within departments. Without clear direction on which tools to use and for which purpose, the teams may struggle to get value out of the existing tools. In addition the complex tool environment further complicates knowledge sharing and undermines value delivered to the organization.	**Develop KM technology blueprint** Once the KM governance and process has been established, develop a KM tool architecture and blue print	Medium	Medium	Short
		Standardize KM tools Leverage KM processes and reporting structure to define KM tool requirements. Perform a fit-gap analysis and select tool standards for the key KM activities (Content Management, collaboration, archiving, etc) Implement tools , develop procedures, and training. Rollout new tools	Medium	Medium	Short
Content	Document taxonomy and content structures are not standardized **Impact:** Inconsistent and undocumented document taxonomies across teams undermines knowledge sharing and easy access to information for decision making. This results in inefficiencies within program teams and functional teams	**Develop current document taxonomy and develop knowledge portals** Develop and communicate document taxonomies for current repositories Implement knowledge portals within current program repositories to facilitate access to information.	High	Low	Immediate
		Create and implement future state taxonomy based on Operating model Leverage operating model to develop future state document taxonomy	Medium	Medium	Medium

10.4 VALIDATION OF THE FRAMEWORK

Validation is defined as an assessment of whether a framework is in congruence with reality (Brink, 2003). The process tries to ensure that the framework represents the characteristics of the general population and not limited to the samples used in the estimation (Good and Hardin, 2003). That is, if the framework is applied to a different sample and there is a severe drop in its predictive power, then the framework clearly does not generalise (Field, 2000). As previously referred to in Chapter 4, 5 professionals were invited to validate the framework that was devised. Between them the 5 professionals had more than 20 years' experience of public sector KM initiatives. Once the face-to-face interviews were underway, the participants were asked their opinions regarding how comprehensive the framework was. The majority of the participants asserted that the framework has a very high degree of comprehensiveness and in terms of areas covered; the developed framework has a very high level of KM issues. Furthermore, the interviewees were asked if they think the framework would help their organisations to manage knowledge and response from all interviewees was very positive. The majority of the participants suggested that the framework would prove effective for managing knowledge and enable organisations to become more competitive. By testing the framework in a range of business and academic settings, it will be possible to make revisions and improve its performance. The framework that was developed and the subsequent tests were intended to achieve the sixth objective of the current study.

10.5 SUMMARY

In conclusion, it appears that taking into consideration the knowledge of stakeholders helps to address prevailing issues affecting public sector organisations. Knowledge is emerging as the

most valuable strategic asset in the modern economy and, therefore, a need exists to actively manage knowledge. By doing so, it is possible to expand the supply of knowledge which, in turn, improves our understanding of issues associated with stakeholder relations. Furthermore, increasing the supply of knowledge fosters trust and encourages people to seek out creative solutions. If organisations can make effective use of corporate portals, they will benefit from creating a valuable shared information workspace in which knowledge can be created, disseminated and applied. Knowledge and applications become synchronised, resulting in a single view into the intellectual capital of an organisation. However, it must be cautioned that creating corporate portals and achieving the necessary critical mass of users is challenging. If public sector organisations are to successfully implement knowledge portals, they must give careful consideration to ensuring managerial commitment, effective leadership, and a suitable culture.

The current chapter has discussed how a framework could be developed for the purposes of KM in the setting of public sector organisations in KSA. As such, the advice offered here will be of use to managers when attempting to operationalise KM strategies with the intention of enhancing organisational effectiveness. Wen developing the framework, careful consideration was given to the findings derived from the earlier stages of the research process as well as the empirical literature review. The result is a framework that is better suited to incorporating KM initiatives in the decisions taken by managers.

Therefore, as a result of this chapter, objective six has been addressed which is concerned with devising and testing a KM framework to assist public sector organisations in KSA.

CHAPTER 11: CONCLUSION AND RECOMMENDATIONS

11.1 INTRODUCTION

This chapter discusses the aim, objectives and research questions of the study. In doing so, it presents the finding and also provides conclusions and recommendations. The key findings are discussed with respect to the objectives of the study. Prior to that, the research process is discussed.

11.2 RESEARCH PROCESS

The overall aim of this study is to investigate how the KSA public sector organisations are managing knowledge to gain sustainable competitive advantage. In order to achieve research aim, the following research objectives were derived.

1. To explore and document the key drivers for implementing knowledge management strategies in the KSA public sector organisations.
2. To investigate and document the key knowledge management strategies that are currently being implemented in the KSA public sector organisations.
3. To explore and document the usage and effectiveness of key knowledge management techniques and technologies.
4. To critically appraise and document the main challenges associated with managing knowledge in the KSA public sector organisations.
5. To critically appraise and document the extent to which managing knowledge contribute to KSA public sector competitiveness.

6. To develop and validate an integrated KM framework for the benefit of KSA public sector organisations.

The following research questions were posed for the current study:

1. What are the key drivers that have fuelled the need for managing knowledge in the KSA public sector organisations?
2. What are the key knowledge management practices that are currently being implemented in the KSA public sector organisations?
3. What are the key knowledge management techniques and technologies that are used in the KSA public sector organisations?
4. How effective are the key knowledge management techniques and technologies that are used in the KSA public sector organisations?
5. What key challenges do the KSA public sector organisations face in managing knowledge?
6. What are the key KM benefits for the KSA public sector organisations?

Quantitative research methodology was adopted to collect and analyse data. Participants in the study included directors, advisers and managers responsible for KM initiatives in their organisations. Overall, a total of 107 fully completed and usable questionnaires were formed the data base for quantitative analysis. Statistical analyses were undertaken using the Statistical Package for Social Sciences (SPSS version 21). These included descriptive statistical analysis and the t-test to compare equality of mean responses between managers and directors.

11.3 KEY FINDINGS

Objective 1: To explore and document the key drivers for implementing knowledge management strategies in the KSA public sector organisations.

Research question 1: What are the key drivers that have fuelled the need for managing knowledge in the KSA public sector organisations?

This study revealed twelve key drivers for managing knowledge in KSA public sector organisations. In the order of their importance, they are: to improve access to key knowledge, to improve employees productivity, to improve the organisation's effectiveness, to protect loss of knowledge due to workers' departures, top management commitment, to improve the capture and use of knowledge, to improve the competitive advantage, to improve the flow of knowledge, to identify knowledge assets, to improve sharing of knowledge, to help integrate knowledge, and to reduce operating costs. Results show that all drivers, are not significant (>0.05), and therefore, there are no significant statistical variations between the responses of the 'directors' and 'managers'.

For objective 1, it is conclude that a complex mix of political, economic, social and environmental forces drives KSA public sector organisations to manage knowledge. Therefore, understanding the drivers for implementing KM strategies is important. This understanding could assist decision makers to develop KM strategies based on the drivers. Most of the time organisations across sectors evaluate KM initiatives as "ineffective". This is because KM initiatives were implemented without fully understanding the drivers and the objectives that had to be met at the outset. Before embarking on a KM journey, decision makers have to understand what it is that they would like to achieve with KM and what value it needs to add to their organisation in the context of Saudi Vision 2030.

Objective 2: To investigate and document the key knowledge management strategies that are currently being implemented in the KSA public sector organisations.

Research question 2: What are the key knowledge management practices that are currently being implemented in the KSA public sector organisations?

This study revealed six key KM related strategies that have been implemented in the KSA public sector organisations. They are: KM related policies, leadership for KM, incentives for KM, knowledge capture, knowledge sharing, training and mentoring. The extent of implementation of KM initiatives is relatively very low in the KSA public sector organisations. The study findings have provided valuable insight into the function that KM plays in Saudi public sector organisations. Knowledge is a resource that organisations have to actively manage in order to realise the full benefits. There are various ways in which this can be achieved but all will require obstacles to be overcome. For instance, the organisation held within an organisation is diverse and complex. In addition, some of that knowledge will be explicit, whereas other elements will be tacit. Therefore, in order to realise the full potential, organisations should adopt a formal KM policy and implement policies to help retain employees. The current research has also established that effective leadership is required if Saudi public sector organisations are to realise the full benefits of KM.

Objective 3: To explore and document the usage and effectiveness of key knowledge management techniques and technologies.

To address this objective, two research questions (i.e. 3 and 4) were investigated.

Research question 3: What are the key knowledge management techniques and technologies that are used in the KSA public sector organisations?

The study revealed twenty-seven key KM techniques and technologies that are used in the KSA public sector organisations. Five most widely used KM techniques and technologies are:

telephone, internet, face-to-face meetings, WhatsApp, and formal education and training, whereas, the five least used KM techniques and technologies are: Viber, FaceTime, LinkedIn, Informal networks, and knowledge maps. Results show that all KM techniques and technologies, apart from internet, are not significant (>0.05), and therefore, there are no significant statistical variations between the responses of the 'directors' and 'managers'. The study revealed that conventional, simple and cost effective KM techniques and technologies such as telephone, internet, face-to-face meetings, WhatsApp, and formal education and training programmes are effective and extensively used. It is surprising to see that WhatsApp is very widely used technology compared to other modern technologies. It is considered as a source for sharing knowledge within social media and it is an instant messaging application for smartphones. It allows users to exchange images, videos, and audio or written messages using their Internet connection. Therefore, it is positioned itself as a superior alternative to SMS messaging, which can be very expensive when used in foreign countries due to roaming charges.

Research question 4: How effective are the key knowledge management techniques and technologies that are used in the KSA public sector organisations?

The study revealed that the five most effective KM techniques and technologies are: twitter, internet, formal education and training, cross-functional teamwork, and face-to-face meetings. Whereas, the five least effective KM techniques and technologies are: Viber, FaceTime, LinkedIn, Facebook, and informal networks within the department. The most effective KM techniques and technologies are again conventional methods. Results show that all KM techniques and technologies, apart from coaching and mentoring, cross-functional collaboration, help desks and interaction with citizens are not significant (>0.05), and

therefore, there are no significant statistical variations between the responses of the 'directors' and 'managers'.

It is necessary for KSA public sector decision makers to recognise and use a blend of ICT and non-ICT based KM techniques and technologies. It is advisable to use conventional, simple, low cost, and easy to use with minimum training needs KM techniques and technologies. It should note that KM techniques and technologies roles are not mutually exclusive and KSA public sector organisations may adopt any combination of them to tackle their particular issues or support particular motives.

Objective 4: To critically appraise and document the main challenges associated with managing knowledge in the KSA public sector organisations..

Research question 5: What key challenges do the KSA public sector organisations face in managing knowledge?

The study revealed ten key challenges for managing knowledge in the KSA public sector organisations. They are: lack of government support for using new technologies, lack of awareness of knowledge, lack of leadership support, lack of knowledge management framework, lack of business case for knowledge management, cultural issues, lack of employee commitment, lack of rewards, lack of training programmes on knowledge management, and lack of appropriate tools for knowledge management.

The challenge of managing knowledge is a daunting task for any organisation. An organisation's knowledge resources are complex and multifaceted, ranging from tacit components to knowledge that is explicitly represented. The ultimate key to organisations

successfully embracing KM initiatives into daily operation is leadership. Effective leadership requires a particular set of attributes that enables to extract ideas and knowledge from stakeholders and transfer this knowledge into organisational assets.

Objective 5: To critically appraise and document the extent to which managing knowledge contribute to KSA public sector competitiveness.

Research question 6: What key benefits from managing knowledge in the KSA public sector organisations?

The current study revealed that KM have a very high positive impact on improving citizen relations whereas to improved knowledge sharing across departments has a least positive impact of KM. This is followed by: to improve productivity, to improve service innovation, to improve knowledge of workers, improve organisational knowledge, and reduced rework. Results show that there are no significant statistical variations between the responses of the 'Directors' and 'Managers'.

Objective 6: To develop and validate an integrated KM framework for the benefit of KSA public sector organisations.

A knowledge management framework for the benefit of KSA public sector organisations was developed and validated. The findings from the previous stages of this research study were taken into consideration in the development of the framework. The developed framework provides broad guidance for the integration of KM initiatives into day-to-day operational decisions. This framework is intended to offer guidance for the successful implementation of KM programs. The framework can be further tested and revised in both business and academic environment.

11.4 RECOMMENDATIONS

Recommendations for decision makers

- The challenge of managing knowledge is a daunting task for any organisation. An organisation's knowledge resources are complex and multifaceted, ranging from tacit components to knowledge that is explicitly represented. The ultimate key to organisations successfully embracing KM initiatives into daily operation is leadership. Effective leadership requires a particular set of attributes that enables to extract ideas and knowledge from stakeholders and transfer this knowledge into organisational assets.
- If knowledge portals are to be utilised to address the problems facing public sector organisations, there should be careful consideration of the challenges relating to managerial commitment, the effectiveness of leadership, technology, organisational culture and people.
- The corporate path to doing well by doing good has become the smart way to do business – only if organisations have the right knowledge and competencies required for it. Therefore, managing knowledge assets associated is essential to improve competitiveness in terms of cost savings, community relation, and productivity.
- Government support for using new technologies, awareness of knowledge, leadership support, KM framework, business case for KM, cultural issues, employee commitment, rewards system, training programmes on KM, and appropriate tools for KM are key factors for managing knowledge in the KSA public sector organisations.
- To address public sector issues, knowledge is increasingly being accessed and shared across sectors and national boundaries. Cross boundary knowledge transactions also apply to boundaries within organisations, between functional specialism's and between

disciplines. Therefore, stakeholders' collaboration is essential for managing knowledge in the KSA public sector organisations.

- A significant level of social, economic and political activity is now happening on the social networks. It offers a nascent but rapidly growing opportunity to overhaul and significantly enhance the process by which Saudi Government understands society and the impact of its policies. Therefore, the KSA government should take a greater leadership role in shaping the information environment and the role of emerging technologies in society that have significant impacts.

Recommendations for KSA public sector organisations

- The implementation of initiatives related to KM is relatively low in the KSA public sector organisations. Therefore, there is a need to reshape the KSA public sector organisations existing KM strategy in order to gain sustainable competitive advantage.
- Knowledge is a resource that organisations have to actively manage in order to realise the full benefits. There are various ways in which this can be achieved but all will require obstacles to be overcome. For instance, the organisation held within an organisation is diverse and complex. In addition, some of that knowledge will be explicit, whereas other elements will be tacit. Therefore, in order to realise the full potential, organisations should adopt a formal KM policy and implement policies to help retain employees. The current research has also established that effective leadership is required if Saudi public sector organisations are to realise the full benefits of KM.
- Many of the challenges facing public sector organisations can be mitigated by taking into consideration the knowledge of stakeholders. In the modern economy, knowledge is a strategic asset and its supply can be increased with careful management. This increase in

knowledge can then deliver a better appreciation of the issues concerning stakeholder relations. In addition, increased knowledge is also associated with heightened levels of trust and the likelihood of revealing creative solutions.

- Corporate portals offer organisations a valuable information workspace for creating, disseminating and applying knowledge. Importantly, these portals also synchronise knowledge and provide a single perspective of the intellectual capital within the organisation. However, it is challenging to develop these portals and then achieve the critical mass required for them to work effectively.
- Organisations in the public sector face a particularly challenging operating environment but it is possible to add value if best-practice KM initiatives are implemented. This requires concerted efforts to ensure collaboration and deliver peer-to-peer learning and productive communities. In preparing for a knowledge-based economy, there are advantages to be realised from nurturing knowledge. As such, adopting and fully implementing KM practices that have been shown to be effective will help organisations to outperform.
- It is necessary for KSA public sector decision makers to recognise and use a blend of ICT and non-ICT based KM techniques and technologies. It is advisable to use conventional, simple, low cost, and easy to use with minimum training needs KM techniques and technologies. It should note that KM techniques and technologies roles are not mutually exclusive and KSA public sector organisations may adopt any combination of them to tackle their particular issues or support particular motives.
- Most of the time organisations across sectors evaluate KM initiatives as “ineffective”. This is because KM initiatives were implemented without fully understanding the drivers and the objectives that had to be met at the outset. Before embarking on a KM journey,

decision makers have to understand what it is that they would like to achieve with KM and what value it needs to add to their organisation in the context of Saudi Vision 2030.

Recommendations for academics and researchers

- Before public sector organisation in KSA can start to implement KM strategies, they must first create and initiate specific KM training programmes. This requires business schools to get on board and play their part in helping to bridge the knowledge gap. Awareness of KM can be improved through executive training programmes and continuing professional development (CPD) programmes.
- One of the main obstacles to implementation facing public sector organisations in KSA is the scarcity of knowledge and expertise. As such, the provision of appropriate training will help all parties to appreciate how KM strategies can be deployed to help organisations outperform over the long-term.

11.5 FUTURE WORK

Having undertaken the current study, it is apparent that there are a number of topics deserving of further research:

- Wide-ranging and long-term studies are required to confirm that the causal mechanisms between KM initiatives and performance hold over all time horizons. In addition, it would be beneficial to establish the time required following the implementation of a KM initiative before the full benefits are realised by the organisation.
- Future research needs to investigate each of the KM initiatives such as mapping, capturing and sharing knowledge on the competitiveness variables. This will provide

practitioners with guidance in determining the degrees to which specific types of KM initiatives can improve the competitiveness.

- The current study is quantitative and it is not possible based on the relatively limited dataset employed to generalise the results. As such, it would be beneficial if further research could be undertaken using different methodologies to consider different perspectives of KM in the setting of Saudi public sector organisations.

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Appendix

APPENDIX A: QUESTIONAIRE SURVEY KNOWLEDGE MANAGEMENT PRACTICES FOR COMPETITIVE ADVATAGE

PURPOSE OF THE SURVEY:

This research survey will examine the current level of understanding and implementation of 'Knowledge Management Practices' in public sector organisations for competitive advantage.

CONFIDENTIALITY:

As this survey is being conducted for university research, there is no commercial benefit. Information provided through this survey will be treated in absolute confidence. The results will only be used for the purpose of this research study and not for any other purpose. All participation will be fully anonymous.

IMPORTANT NOTES:

1. The questions do not have a 'right' or 'wrong' answer. Please answer truthfully based on your personal knowledge or experience.
2. Please attempt to answer every question even if you do not believe it to be relevant, as they have been asked with specific research objectives in mind. However, if there is any question which you are unable or unwilling to answer please move on to the remaining questions.
3. Remember that neither your identity nor the department within the organisation for which you work will be revealed and will remain confidential.

PART1 – GENERAL INFORMATION

1.1	**Please indicate your current job title or position:……..…….……**				
1.2	**Which of the following best describes your job level or position? (Please tick one)**	**Senior [ ]**	**Middle [ ]**	**Junior [ ]**	**Professional/specialist [ ]**
		Other (please specify):……..…….....			
1.3	**Please indicate the total number of employees in your department**	**1-50 [ ]**	**51-250 [ ]**	**251-500 [ ]**	
		501-999 [ ]	**1000+ [ ]**		

PART 2 – KEY REASONS FOR IMPLEMENTING KNOWLEDGE MANAGEMENT INITIATIVES

2.0 The following is a list of key reasons for implementing knowledge management initiatives. Given your job role, please indicate **(by circling the appropriate number)** the level of importance you attribute to each reason.

Meaning of Scale :

4 = Very Important **3 = Important** **2 = Fairly important** **1 = Not at all important**

	Key Drivers	LEVEL OF IMPORTANCE			
1	To reduce operating costs	**4**	**3**	**2**	1
2	Top management commitment	**4**	**3**	**2**	1
3	To Improve the organization's effectiveness	**4**	**3**	**2**	1
4	To improve access to key knowledge	**4**	**3**	**2**	1
5	To identify knowledge assets	**4**	**3**	**2**	1
6	To Improve the flow of knowledge	**4**	**3**	**2**	1
7	To improve the competitive advantage	**4**	**3**	**2**	1
8	To help integrate knowledge	**4**	**3**	**2**	1
9	To improve the capture and use of knowledge	**4**	**3**	**2**	1
10	To improve sharing of knowledge	**4**	**3**	**2**	1
11	To improve employees productivity	**4**	**3**	**2**	1
12	To protect loss of knowledge due to workers' departures	**4**	**3**	**2**	1

PART 3 – KEY KNOWLEDGE MANAGEMENT INITIATIVES THAT HAVE BEEN IMPLEMENTED, PLANNED, OR NOT TO BE IMPLEMENTED IN YOUR ORGANISATION

3.0 Using the table below, please indicate **(by circling the appropriate number)** the extent to which the following key knowledge management initiatives have been implemented, planned, or not to be implemented in your organisation?

4 = Implemented and in use **3 = Implemented but not in current use** **2 = Planned to be Implemented in the next 5 years** **1 = Do not have any plan for Implementation**

	Knowledge Management Practices	**LEVEL OF IMPLEMENTATION**			
Policies					
1	Organisation has a written knowledge management policy	**4**	**3**	**2**	1
2	Organisation has a policies to improve worker retention	**4**	**3**	**2**	1
3	Organisation uses partnerships to acquire knowledge	**4**	**3**	**2**	1
4	Organisation uses strategic alliances to acquire knowledge	**4**	**3**	**2**	1
Leadership:					
1	Knowledge management practices were a responsibility of managers	**4**	**3**	**2**	1
2	Knowledge management practices were a responsibility of the knowledge officer	**4**	**3**	**2**	1
3	Knowledge management practices were explicit criteria for assessing employees performance	**4**	**3**	**2**	1
4	Knowledge management practices were a responsibility of non-management employees	**4**	**3**	**2**	1
Incentives					
1	Knowledge sharing was rewarded with monetary incentives	**4**	**3**	**2**	1
2	Knowledge sharing was rewarded with non-monetary incentives	**4**	**3**	**2**	1
Knowledge capture					
1	Organisation regularly captures and uses knowledge obtained from other sources such as associations, clients and suppliers	**4**	**3**	**2**	1
2	Organisation regularly captures and uses knowledge obtained from public research institutions including universities and government laboratories	**4**	**3**	**2**	1
3	Organisation regularly dedicates resources to identify and obtain external knowledge	**4**	**3**	**2**	1
4	Organisation encourages workers to participate in project teams with external experts	**4**	**3**	**2**	1
Training and Mentoring					
1	Organisation provides formal training related to knowledge management practices	**4**	**3**	**2**	1
2	Organisation uses formal mentoring practices to share knowledge	**4**	**3**	**2**	1
3	Organisation encourages experienced workers to transfer their knowledge to new or less experienced employees	**4**	**3**	**2**	1
4	Organisation encourages employees to continue their education by reimbursing tuition fees for successfully completed work-related courses	**4**	**3**	**2**	1
5	Organisation offers off-site training to workers in order to keep skills current	**4**	**3**	**2**	1
Knowledge sharing					
1	Organisation regularly updates databases of good work practices and lessons learned	**4**	**3**	**2**	1
2	Organisation regularly updates written documentation such as lessons learned, training manuals, good work practices, articles for publication, etc. (organisational memory)	**4**	**3**	**2**	1
3	Organisation encourages employees to share knowledge in collaborative work by project teams that are physically separated	**4**	**3**	**2**	1

PART 4– TECHNIQUES AND TECHNOLOGIES FOR MANAGING KNOWLEDGE

3.0 The following is a list of knowledge management techniques and technologies.

Please indicate in **Column I** which of these **YOU** currently use (**by ticking the appropriate number).** **Scale for Column I:**

4 = Always Used **3 = Often Used** **2 = Sometimes Used** **1 = Never Used**

Please indicate in **Column II** how **effective YOU** believe them to be **(by ticking the appropriate number).** **Scale for Column II:**

4 = Highly Effective **3 = Has Some Effect** **2 = Has Little Effect** **1 = Has No Effect**

	TOOLS AND TECHNOLOGIES	CURRENT USE ALWAYS			NEVER	EFFECTIVENESS HIGH			LOW
1	Brainstorming	4	3	2	1	4	3	2	1
2	Bulletin Boards	4	3	2	1	4	3	2	1
3	Coaching and Mentoring	4	3	2	1	4	3	2	1
4	Communities of Practice	4	3	2	1	4	3	2	1
5	Cross-Functional Teamwork	4	3	2	1	4	3	2	1
6	Face-to-Face Meetings	4	3	2	1	4	3	2	1
7	Formal Education and Training	4	3	2	1	4	3	2	1
8	Formal on-the-job Training	4	3	2	1	4	3	2	1
9	Help Desks	4	3	2	1	4	3	2	1
10	Informal Networks within the Department	4	3	2	1	4	3	2	1
11	Interaction with Client/Supplier/Customer	4	3	2	1	4	3	2	1
12	Internet/Email/Intranet	4	3	2	1	4	3	2	1
13	Job Rotation	4	3	2	1	4	3	2	1
14	Knowledge Maps	4	3	2	1	4	3	2	1
15	Project Summaries	4	3	2	1	4	3	2	1
16	Story Telling	4	3	2	1	4	3	2	1
17	Telephone	4	3	2	1	4	3	2	1
18	Video Conferencing	4	3	2	1	4	3	2	1
19	Work Manuals	4	3	2	1	4	3	2	1
20	Viber	4	3	2	1	4	3	2	1
21	WhatsApp	4	3	2	1	4	3	2	1
22	Instagram	4	3	2	1	4	3	2	1
23	Facebook	4	3	2	1	4	3	2	1
24	Twitter	4	3	2	1	4	3	2	1
25	FaceTime	4	3	2	1	4	3	2	1
26	Snapchat	4	3	2	1	4	3	2	1
27	LinkedIn	4	3	2	1	4	3	2	1

PART 5 – KEY CHALLENGES FOR IMPLEMENTING KNOWLEDGE MANAGEMENT INITIATIVES

5.0 Many challenges are faced when implementing knowledge management initiatives. To what extent do you feel the following are challenges for your organisation?

Please indicate **(By ticking the appropriate number)** the extent to which the following are a **challenge** for implementing knowledge management initiatives.

Meaning of Scale :

4 = Very challenging **3 = challenging** **2 = Fairly challenging** **1 = Not at all challenging**

	Key Challenges	LEVEL OF CHALLENGE			
1	Lack of government support in developing / applying new technologies	**4**	**3**	**2**	1
2	Lack of awareness of knowledge	**4**	**3**	**2**	1
3	Lack of leadership support	**4**	**3**	**2**	1
4	Lack of knowledge management framework	**4**	**3**	**2**	1
5	Lack of business case for knowledge management	**4**	**3**	**2**	1
6	Cultural issues	**4**	**3**	**2**	1
7	Lack of Employee engagement and commitment	**4**	**3**	**2**	1
8	Weak incentives and rewards	**4**	**3**	**2**	1
9	Lack of training programmes on knowledge management	**4**	**3**	**2**	1
10	Lack of appropriate mechanisms for knowledge management	**4**	**3**	**2**	1

PART 6 – BENEFITS OF KNOWLEDGE MANAGEMENT PRACTICES ON COMPETITIVENESS

6.0 Listed in the table below are the benefits of knowledge management practices. Please indicate (by circling the appropriate number) the level of effectiveness of knowledge management practices on your organisational competitiveness.

Meaning of Scale :

4 = Very effective **3 = Effective** **2 = Fairly effective** **1 = Not at all effective**

	Benefits of using knowledge management practices	LEVEL OF EFFECTIVE			
1	Improved knowledge sharing across departments	**4**	**3**	**2**	1
2	Improved productivity	**4**	**3**	**2**	1
3	Improved knowledge of workers	**4**	**3**	**2**	1
4	Improved citizen relations	**4**	**3**	**2**	1
5	Improved services innovation	**4**	**3**	**2**	1
6	Reduces rework	**4**	**3**	**2**	1
7	Improved organisational knowledge base	**4**	**3**	**2**	1

PLEASE PROVIDE FURTHER COMMENTS OR IDEAS WHICH YOU BELIEVE COULD MAKE YOUR DEPARTMENT OF THE ORGANISATION MORE COMPETITIVE OR EFFICIENT IN THE SPACE BELOW.

THANK YOU VERY MUCH FOR TAKING THE TIME TO COMPLETE THIS QUESTIONNAIRE.

Kindly tick the **(✓)** box below if you would like to further assist in this research by taking part in additional surveys that we conduct.

YES[ ] **YES, BUT I WOULD NEED MORE INFORMATION** [ ] **NO** [ ]

☐	In return for completing this survey you will be entitled to receive a highlights report of the findings. If you would like to have a copy, kindly tick the (✓) box and fill in your name and address below. **Please Note:** this does **NOT** affect the anonymity of your replies given above. These personal details will not be connected to or stored with the answers given, which is why this information is on a separate page..

NAME:	
ADDRESS:	
EMAIL:	

APPENDIX B: ETHICS AND SAFETY APPROVAL FORM

ETHICAL CONSIDERATION FOR STUDENTS STUDYING TAUGHT PROGRAMMES

Please tick (✓) aspects relevant to you and your investigation

Section 1: Your details			
First Name & Surname:	Khaled AlGahtani	**Student No:**	1200375
Course:	PhD		
Project Title	**Knowledge Management Practices for Sustainable Competitive Advantage: A Case of Kingdom of Saudi Arabia**		

Section 2: Your Project Topic	
2.1 What problem/issue is this project addressing? (100 words or less)	The idea that knowledge is an asset has been growing over the last decade, and Knowledge Management (KM) has played a critical role in the strategic management of human capital in public organisations. Various measures are employed by both public and private sector organisations to gain competitive advantage. However with rapid advances in technology and globalisation of businesses it has become increasingly difficult for an organisation to sustain competitive position without embracing knowledge and focusing on development of human resource. Knowledge management in public organisations must maintain this important asset of the organisation's assets, and seek to provide the technical means available to private and configured a way that allows the preservation of knowledge and take advantage of it. Application of knowledge management in the Saudi public sector judged on the effectiveness and usefulness of knowledge, especially in the strategic process for achieving the high quality of services and products that meet the needs of beneficiaries, so knowledge management is an influential force if applied as it should. The problem statement under investigation is the analysis of the application of Knowledge Management for Sustainable Competitive Advantage in the Ministry of Justice Kingdom of Saudi Arabia. The study is significant enough as it helps the analyst in the determination and the implication of KM in the organizational context and for this purpose, the findings of the current study will be useful for policy makers and managers of Ministry of Justice Kingdom of Saudi Arabia, that will be making implementation of KM as a part of their organizational strategy.
2.2 Will information or artefact resulting from your project be available externally to the University?	No
2.2.1 **If you answered 'yes' to 2.2,** Will any such information place anyone at risk or possibly result in any action that might be detrimental to their wellbeing? (See	No

guidelines)	
2.2.2 In what format will the information or artefact be made available?	Thesis soft and hard will be kept in the university library and these could be borrowed by researchers. Results of the study will also be published in journals and conference proceedings.
Section 3: Method of Data Collection	
3.1 Does any part of your proposed project involve human participants? If No go to Section 4.	Yes
3.1.1 **If you answered 'yes' to 3.1,** Is the sole involvement of human participants in order to provide opinions to support the specification or testing of an artefact to be produced as an outcome of the project?	Yes
3.1.2 **If you answered 'yes' to 3.1.1,** Does this artefact/information have any characteristics which might be detrimental to the wellbeing of any human participants in your project? If so, explain.	No
3.2 **If you answered 'yes' to 3.1,** Are there other ways you might meet your project aims without involving human participants? If not, why? If yes discuss with your Supervisor how you will achieve this and go to section 4.	No, Because I need to take human response and feedback. I will use questionnaires and interviews to get these responses.
3.2.1 How will you select your participants?	Concerning this study, selected sample will be adopted for questionnaires and interviews through managers and employees in MOJ in Saudi Arabia. This choice based on prior knowledge of the researcher for members of these samples (The population is that of the MOJ itself and the size of the sample chosen needs to be determined statistically. It will be a mixed-method approaches.
3.2.2 How many participants will you contact?	Around 370 participants for the questionnaires. Around 20 participants for the interviews (more manageable)
3.2.3 How will you approach potential participants? E.g. email, letter, face to face, telephone?	Participants to be approached by Face-to-Face, and Emails contact.
3.2.4 Are your participants adults? (over 18 and competent to give consent) If no, answer 3.2.5	Yes
3.2.5 Are your participant's children or adults over 18 and not competent to give consent? If yes, why is it necessary to involve	No

these participants? (See guidelines) Explain how you will ensure parental/guardian consent.	
3.2.6 Are you offering any incentives to any of your participants, financial or otherwise? (See guidelines)	No
3.2.7 How much time do you estimate will be needed from any participants? (See guidelines)	Approximately 15-20 minutes.
3.2.8 Please list the method of data collection and analysis intended to be used	Questionnaires.
3.2.9 Will all of the data collected contribute towards your results?	Yes.

Section 4: Confidentiality and data handling	
Please read methods of ensuring confidentiality in the guidelines.	
4.1 Will you ensure the anonymity of data collected from/and about participants?	Yes
4.2 Will you store/protect data collected from individuals e.g. password protected files?	No
4.3 Once your project is complete and information is no longer needed, will you destroy your data?	No
4.4 Will anyone else have access to the data collected?	Yes
If so, (i) please name the individuals and/or groups that will have access; (ii) why is access being given to those listed in (i)?	My supervisors Dr Suresh Renukappa and Dr Subashini Suresh.They will have access to this data in order to evaluate the PhD work.

Section 5: Working with other parties and companies	
5.1 Will you be using data on subjects held by another party or organisation?	No
If Yes, How will you gain access to this information?	
NB: If working with another organisation or company please familiarise yourself with their Health & Safety procedures.	

Things you must be aware of:

Data Protection Act: http://www.ico.gov.uk/what_we_cover/data_protection.aspx

Freedom of Information Act: http://www.opsi.gov.uk/Acts/acts2000/ukpga_20000036_en_1

University of Wolverhampton Ethical Approval Procedural Guidelines

Note:

1. Final version of questionnaires and interview questions to be submitted to supervisor for confirmation of 'fitness for purpose' BEFORE any data is collected.

Student's Declaration Sign and date against **one** declaration **only**	
Category 0. My project involves no human participation except for myself and I agree to ensure that any information or artefact produced will not be available outside the University.	
Category A1. My project involves limited human participation and I agree to ensure that (i) any such participation is not detrimental in any way to the interests of the participants; (ii) all information collected as a part of the project will be handled in accordance with the answers that I gave to question **4**; (iii) No information or artefacts which may place anyone at risk or be detrimental to their wellbeing will be made available outside the University.	16/12/2015
Category A2. My project involves human participation and may present some risk to participants. I have considered alternative means of pursuing the project which do not entail this risk but believe that there is no practicable alternative. I agree to ensure that I take all necessary steps to minimise risks to participants and third parties. I agree not to proceed with any activities involving human participation until I have received approval from the Department Ethics Panel.	
Category B-E. My project does not conform to Category 0, A1 or A2. I have considered alternative means of pursuing the project which do not entail risk to human participants but believe that there is no practicable alternative to the proposal made. I agree to ensure that I take all necessary steps to minimise risks to participants. I agree not to proceed with any activities involving human participation until I have received approval from the School or University Ethics Committee, as appropriate.	
Supervisor's Declaration Sign and date against **one** declaration **only**	
Category 0 or A1. I concur with the classification of this project as **0** or **A1** and authorise continuation of the project. I have forwarded a copy of this form to the Department Ethics Panel for monitoring purposes.	
Other. I believe that this project should be classified other than **0** or **A1.** I do **not** authorise continuation of the project until approval has been received from the appropriate Ethics Panel or Committee. I have forwarded a copy of this form to the Department Ethics Panel for	

consideration.	

FOR SUPERVISOR/PANEL/COMMITTEE USE ONLY:

CLASSIFICATION ALLOCATED BY SUPERVISOR									
0, A1		**Supervisor Action:** Authorise and forward to DEP					Date		
	DEP Action: File for possible monitoring						Date		
		Selected for monitoring		(tick)			Date		
		Classification agreed?	Yes		No		If 'No', give:		
		reason							
		action							
Other		**Supervisor Action:** Refer to DEP for decision					Date		
	CLASSIFICATION ALLOCATED BY DEPARTMENT ETHICS PANEL								
	0, A1		**DEP Action:** Project authorised to continue				Date		
	A2		**Considered by DEP below**				Date		
		2.2 Is any risk associated with access to project acceptable in context? If no, give reasons below:					Yes		No
		3.1 Is involvement of human participants justified? If no, give reasons below:					Yes		No
		3.3 Is experimental method acceptable with regard to risk and inconvenience to participants? If no, give reasons below:					Yes		No
		4 Are arrangements for confidentiality and data protection appropriate? If no, give reasons below					Yes		No
		5 Do arrangements for working with external bodies protect interests of participants and the external bodies? If no, give reasons below					Yes		No
		DEP Action: Continuation of project approved:	Yes		No		Date		
		Conditions:							
	Other		**DEP Action:** Refer to School Ethics Committee				Date		
		CLASSIFICATION ALLOCATED BY SCHOOL ETHICS COMMITTEE							
		0, A1		**SEC Action:** Continuation of project approved			Date		
		A2, B		**Considered by SEC below**			Date		
			2.2 Is any risk associated with access to project acceptable in context? If no, give reasons below:				Yes		No

			3.1 Is involvement of human participants justified? If no, give reasons below:					Yes		No	
			3.3 Is experimental method acceptable with regard to risk and inconvenience to participants? If no, give reasons below:					Yes		No	
			4 Are arrangements for confidentiality and data protection appropriate? If no, give reasons below					Yes		No	
			5 Do arrangements for working with external bodies protect interests of participants and the external bodies? If no, give reasons below					Yes		No	
			SEC Action: Continuation of project approved:	Yes		No		Date			
			Conditions:								
		Other		**SEC Action:** Refer to University Ethics Committee				Date			

Guidelines

Section 1: Categorisation for ethical approval

Category 0: There are no third parties directly involved in the project and any artefacts produced by the project will not be accessible to a general audience.

Category A1

Projects involving human volunteers are involved solely for the purposes of:

- providing data to inform the specification of an artefact
- testing the usability or fitness for purpose of an artefact

where the nature of that artefact or its use will present no risk to the volunteers

and, if any artefact is accessible to a general audience, access to that artefact will present no risk.

Category A2

Projects involving human volunteers other than those defined in category A1 but not in activities defined in other categories or if any artefact is accessible to a general audience, access to that artefact may present some risk.

Category B

Projects involving human volunteers including potential risk, for instance,

studies using new research methodologies, studies involving certain vulnerable

populations or therapeutic interventions or other significant risk to anyone involved in

the research (but not including trials of artefacts intended for therapeutic purposes).

Category C

Research being conducted by staff or postgraduate research students involving

Patients, clients staff, records etc. within the sphere of the NHS, Social Services, etc (but not including clinical trials of medicinal or related products).

Category D

Research being conducted by undergraduate or taught postgraduate students involving

Patients, clients staff, records etc. within the sphere of the NHS, Social Services, etc (but not including clinical trials of medicinal or related products).

Category E

Clinical trials of medicinal or related products involving patients or healthy volunteers as direct users of the product.

Question 2.2: You should answer yes if your artefact, product or information might be of direct risk or might lead or encourage people to alter their behaviour in a way which would be detrimental to them. Examples of direct potential risk might be a machine that could injure someone if it malfunctioned or a web resource which contained information which if it was misused would lead to risk (for instance, children's identities or addresses). Examples of artefacts which might encourage detrimental behaviour could be a web resource offering alternatives to expert (such as GP or lawyer) advice or products which purport to have a therapeutic effect.

Question 3.2.5: As a general principle, all participants should be informed of their role in the experiment and freely consent (in writing) to it, which implies competence to give consent. Very occasionally it may be necessary to undertake an experiment without consent, or with participants who are not competent but then any decision about the acceptability of the proposal would be taken on the basis of the absolute benefit of the experiment in a wider context, and it would have to be established that there was no alternative.

Question 3.2.6: With regard to freedom of consent, it likely that this principle would be breached of the participants were subject to some kind of inducement or coercion, however minor. For instance, it is likely that participants who were under the management of the person undertaking the experiment would be considered to be under a degree of coercion.

Question 3.2.7: It may be considered that expecting a participant to spend undue time or effort participating in an experiment would be detrimental to the interests of that person, particularly where the results of the work offered no clear benefits. It may be appropriate to compensate participants for their time, but it is not acceptable to offer inducements to participate.

Section 4 Anonymity:

It is to be expected that due care and attention be paid to protecting information about individuals. Depending on the nature of the experiment, the following may be considered.

- Type 1: Complete anonymity of participants (i.e., You will not meet, or know the identity of participants, as they are part of a random/selective sample and are required to return responses with no form of personal identification)?

- Type 2: Anonymised samples or data (i.e., an irreversible process whereby identifiers are removed from data and replaced by a code, with no record retained of how the code relates to the identifiers. It is then impossible to identify the individual to whom the sample of information relates)?

- Type 3: De-identified samples or data (i.e., a *reversible* process whereby identifiers are replaced by a code, to which you retain the key, in a secure location)?

- Type 4: Subjects being referred to by pseudonym in any publication arising from the project?

- Type 5: Any other method of protecting the privacy of participants? (eg. use of direct quotes with specific, written permission only; use of real name with specific, written permission only)